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Department of Energy

Rocky Flats Office

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GOODWIN, R.		
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HEALY, T.J.		
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KIRBY, W.A.		
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KUESTER, A.W.		
LEE, E.M.		
MAJESTIC, J.P.		
MARX, G.E.		
MORGAN, R.V.		
PIZZUTO, V.M.		
POTTER, G.L.		
SANDLIN, N.B.		
SHEPLER, R.L.		
SULLIVAN, M.T.		
SWANSON, E.R.		
TALLMAN, K.G.		
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ZANE, J.O.		
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5-18-92

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EG&G
ROCKY FLATS PLANT
CORRESPONDENCE CONTROL

ERD:PMP:5187

Section D Categorical Exclusion (RFO/CX010-92) Determination

C. M. Borgstrom, Director Office of NEPA Oversight, EH-25

A copy of RFO/CX010-92, Site Characterization Activities, is attached for your review. A copy of the Floodplain/Wetland Assessment that has been prepared for this project is also attached for your information. Work will begin immediately on the activities that are not located within floodplains at the plant site.

Terry A. Vaeth
Manager

Attachments

cc w/Attachments:
R. Scott, EM-20
A. Rampertaap, EM-453
L. Lawson, EM-431
S. Nesta, EG&G

MAY 19 1992

A-OU04-000741

DE-46522 (Rev 2/92)

SECTION D DETERMINATION
CATEGORICAL EXCLUSION (CX) DETERMINATION - RFO/CX010-92

Proposed Action: Site Characterization Activities

Location: OU 3, 4, 7 & 9, Rocky Flats Plant, Golden, Colorado

Proposed by: U.S. Department of Energy Rocky Flats Office (RFO)

Description of the proposed action:

The Department of Energy proposes to initiate site characterization work in Operable Unit (OU) 3 (Off site Areas), OU 4 (Solar Evaporation Ponds), OU 7 (Present Landfill) and OU 9 (Original Process Waste Lines) at the Rocky Flats Plant (RFP). The location of RFP is shown in Figure 1. Site characterization would involve the collection of surface water, groundwater, soil, sediment and air samples to identify the nature and extent of contamination that has been released to the environment. In addition, field surveys and sampling of terrestrial and aquatic biota would be conducted. The work would be undertaken pursuant to the provisions of the Comprehensive Environmental Response, Compensation and Liability Act and the Resource Conservation and Recovery Act and is an integral part of DOE's program to remediate contamination at RFP. Site characterization work in OUs 3, 4, 7 and 9 would start in 1992. Most of the work would be completed during 1992, but some would occur during subsequent years.

Operable Unit 3 - Off site Areas

OU 3 includes various lands off the RFP site immediately to the east of the Plant's buffer zone as shown in Figure 2. Figure 3 shows approximately where vertical soil profile trenches are planned. Vertical soil profile sampling involves using a backhoe to dig a trench that is up to 9 feet long, 5 feet wide and 4 feet deep. Eleven samples would be collected from various depths in each trench. A trench can usually be dug and backfilled in the same day. The soil removed from the trench would be used to backfill it. Six trenches could be located in floodplains.

Surficial soil samples would be collected within approximately 12 miles of RFP as shown in Figure 4. Twenty-five scrapes would be taken in the vicinity of each of the dots on the map. Samples would be taken on a grid pattern with a small, hand held device which collects 2 to 3 tablespoons of soil from the top one-quarter inch of the ground. Any of the soil scrapes has the potential to be taken from within a floodplain.

Sediment sampling locations are shown in Figure 5. Sediment sampling involves pedestrian visits to sampling stations to collect up to a few pounds of sediments. Both new and existing sampling stations would be used. A new sediment sampling station is established by driving a metal fence post into the ground to mark a site which can be returned to in the future. Some of the sediment sampling stations would be located on streams or ditches while others would be located on the shores or under the waters of ponds, lakes, or reservoirs. Vertical sediment profile samples would be taken from reservoir bottoms by dropping a tube through the water into the sediment. The bottom of the tube closes and up to 3 feet of sediment can be withdrawn

for analysis. Sediment grab samples would also be taken from reservoir bottoms, but include only the top 2 to 3 inches of sediment. By their nature, all sediment sampling stations and sample collection activities would be in floodplains.

Figure 6 shows the locations of surface water sampling sites. Surface water sampling involves gathering up to a few gallons of water in hand held containers. Both new and existing sampling stations would be used. A new surface water sampling station is established by driving a metal fence post into the ground to mark a site which can be returned to in the future. Some of the surface water sampling stations are, or would be, located on streams or ditches while others would be located on the shores or waters of ponds, lakes, or reservoirs. By their nature, all surface water sampling stations and sample collection activities would be in floodplains.

Locations of existing and planned ground water monitoring wells are shown in Figure 7, including an alluvial well and an Arapahoe Formation well to be drilled immediately downstream of both Great Western Reservoir and Standley Lake. These locations are in the floodplains of Walnut and Big Dry Creeks respectively. The four new wells would be drilled using a truck mounted drill rig to drill a six inch diameter hole approximately 15 to 60 feet deep. The wells would be completed and screened for sampling of the desired interval. Vegetation around each well site would be trampled during well drilling operations. When characterization activities are completed and water samples were no longer needed (approximately 3 years), the wells would be plugged and abandoned according to standard plant practices, unless custody of the wells is transferred to the cities of Westminster and Broomfield for continued use.

Also shown in Figure 7 are the locations of air and meteorological monitoring stations. Three types of air sampling and meteorological monitoring activities would occur at OU 3. One would be installation of three new high volume air samplers. Two of the samplers would be located at Standley Lake while the third would be at a site in a terrestrial area north of the Lake. An air sampler is a piece of equipment housed in a stainless steel box approximately 2 feet on a side. The air samplers would be installed by pouring a concrete pad on which the air sampler is mounted, and installing two power poles to bring an electric line to the site. The pads and samplers would be removed after the study is complete (about 3 years). One of the sampler locations may be within the floodplain of Standley Lake, but would be unlikely to be inundated by anything other than a 50 or 100 year storm event.

The second activity is installation of two new meteorological monitoring stations. The locations of these stations are also shown in Figure 7. The stations are 6 meter towers on small concrete pads. The towers may be fenced for protection if necessary. Each tower would hold instruments to measure meteorological characteristics and may be supported by guy wires. One of the stations would be co-located with one of the air samplers in the floodplain of Standley Lake. The second tower would be installed at a terrestrial site approximately a mile east of the eastern RFP boundary, south of Great Western Reservoir. Installation and operation of the meteorological towers is not expected to have any adverse impacts to floodplains because of the non-invasive character of the activity.

The third air sampling activity in the OU 3 is the use of small and medium sized portable wind tunnels to characterize and measure the ability of winds at various speeds to move sediments on the exposed areas of the Standley Lake bed. The wind tunnels are mounted on a small trailer and

have an open-floored test section which is placed over the surface of the lake bed. Air is drawn through the test section at controlled velocities. The air stream passes through a duct fitted with a filter which collects particulates raised from the lake bed by the wind. The particulate samples would be sent to a laboratory to identify their volume and constituents. Approximately six tests would be conducted at each of three sites in late summer when soil moisture is generally at its lowest level. Each of the tests would take about one day. One site would be on the bed of Standley Lake, the second on the bed of Great Western Reservoir, and the third on an unidentified upland site south of Great Western Reservoir. The first two sets of tests would take place within the floodplains of Standley Lake and Great Western Reservoir.

Figures 8a and 8b shows the locations of terrestrial and aquatic flora and fauna sampling. The samples would be gathered using standard collection techniques such as vegetative clipping, live animal trapping and field surveys to make population counts. These activities would continue for a year. All of the aquatic and some terrestrial sampling locations are in floodplains.

Operable Unit 4 - Solar Evaporation Ponds

OU 4 is located in the northeast portion of the developed area of RFP as shown in Figure 9. The Solar Ponds are located inside the high security area of RFP, known as the Protected Area (PA).

Two monitoring well clusters are proposed at locations hydrologically up gradient of the ponds as shown in Figure 10. Each cluster would consist of three new wells: one well screened in alluvial sediments, the second in weathered bedrock and the third in unweathered bedrock. The wells would be drilled using a truck mounted drill rig to drill a six inch diameter hole approximately 15 to 60 feet deep. Drill cores would be collected for analysis and to determine of whether the associated drill cuttings require treatment before disposal. Vegetation around each well site would be trampled during well drilling operations.

Figure 11 shows the locations of proposed radiological survey readings and surficial soil samples. The radiological survey would consist of a surveyor taking 1 minute readings with a gamma probe held at waist height at each of the approximately 350 stations shown in Figure 11. The surveyor would also take a reading of alpha radiation at the same stations. Alpha readings would be taken from eight locations on a 5 foot radius from each station with the alpha counter held 4 to 6 inches above the ground.

Figure 11 also shows the locations at which approximately 35 surficial soil samples would be taken. At each location, two 1-meter square areas would be staked out one meter apart. Samples would be collected to a depth of 1 inch with either a plug-type collector or a scoop. In addition to these 35 samples, surficial soil would be collected at the location of each of the four boreholes shown in Figure 12.

Site characterization at OU 4 would include a program to locate two earlier ponds and any residual piping associated with them in the mottled area shown in Figure 12. Also shown in Figure 12 are the locations of four new boreholes to be drilled in the area of the two original solar ponds. Cuttings from these boreholes would be collected and analyzed for their chemical constituents as part of the effort to characterize the original solar ponds. These boreholes would

be drilled to the depth of saturated soil or to bedrock. The holes would be 15 to 20 feet deep.

Figure 13 presents the locations of approximately 26 new soil boreholes that would be drilled in and around the sites of the five existing Solar Ponds. It is expected that most of these boreholes would be 15 to 20 feet deep. However, six of the 26 boreholes in the area of the existing ponds would be 40 to 60 feet deep to collect geologic information. The six locations of the deeper boreholes have not yet been identified.

The mottled area in Figure 13 shows the area around the existing ponds that would be surveyed with ground penetrating radar. A transmitter would be used to send out a signal which is reflected by the earth's layers and returned to a receiver on the ground surface. The return signal is recorded and translated to provide a picture of the subsurface.

North and hydrologically down gradient of the Solar Ponds is a system of French drains referred to as the Interceptor Trench System (ITS). The ITS was installed to collect ground water contaminated by liquids leaking from the ponds and is shown by the dashed lines in Figure 14. A total of 19 soil boreholes is planned in the area of the ITS at the locations shown in Figure 14. These boreholes would be drilled to provide soil contaminant information at various distances from the Ponds, and to compare contaminant levels up gradient and down gradient of the ITS. The boreholes would be 15 to 60 feet deep. Three nests of six piezometers would be placed in three of the deeper boreholes in the ITS area to provide data on ground water levels. The borehole locations used would determined by the data provided by the boreholes. Boreholes would be abandoned according to standard operating procedures when they are no longer needed.

Flora and fauna would be sampled at proposed locations shown in Figure 15. These locations are tentative and subject to change as field conditions require. Sampling would include vegetative clipping and live trapping of animals for population counts and tissue analysis.

Not shown in any of the figures are locations of soil lysimeters for investigation of the vadose zone. Soil lysimeters are devices that can collect soil moisture and soil gas samples. They can be mounted on the end of metal rods and driven into the ground, or installed by drilling small diameter holes into which a lysimeter is placed. At the Solar Ponds, the rods or boreholes would be 1 to 3 inches in diameter and the lysimeters placed at depths of between 10 and 20 feet. Up to 100 lysimeters may be used in locations that would be determined from analytical information from other boreholes drilled in the areas of the Ponds and the ITS.

Operable Unit 9 - Original Process Waste Lines

Figure 16 shows the location of OU 9, the Original Process Waste Lines (OPWL). The OPWL constitute a system of tanks and underground pipes that were used to store and carry liquid wastes from various manufacturing processes to a treatment plant at RFP, or from the treatment plant to other facilities such as the Solar Ponds. Portions of the OPWL are included in the current process waste transfer system, but most of the system was replaced and abandoned prior to 1984 and is no longer in use. Some of the lines shown in Figure 16 are in or under production buildings. These sections would not be investigated at this time. Because the OPWL is a group of underground linear features much of which was constructed over 30 years ago, and

because documentation of the lines is incomplete, site characterization efforts at this time would consist chiefly of digging test pits and drilling boreholes to determine where leaks might have occurred. Figure 17 shows the proposed locations of the initial test pits (denoted by a small square).

The OPWL site characterization program would be divided into two parts: one would look at pipelines and the second would look at tanks. Pipeline locating devices may be used to define pipeline locations. Both investigations would use mechanical (backhoe) and hand held (shovel) equipment to dig pits to the depths necessary to provide for physical and visual access to the lines or tanks. The pipelines are believed to be between 3 and 8 feet deep. The first stage of the pipeline investigation is planned to include pits at the locations shown in Figure 17 which are the sites of pipeline endpoints or known structural features where leakage is most likely to have occurred. Additional test pits would be excavated at intervals not greater than 200 feet throughout the OPWL system. It is anticipated that data compilation would identify the general or even exact locations of historic leaks, and pits would be excavated at these locations. Test pits would be spaced no more than 100 feet apart where releases are believed to have occurred but the exact location is not evident from the record, or where visual inspection reveals instances of poor pipeline integrity or other indications of potential leakage. Some of the test pits may be within floodplains at the eastern ends of the pipelines.

An individual test pit would be excavated so that soil samples can be taken at the surface prior to excavation, in the original pipeline bedding material directly below the pipe, and in native soil under the backfill. Test pits would remain open one or two days. Based on expected conditions, the deepest test pit should be 11 to 12 feet deep.

Where practical, samples of residues in the pipe would be collected by gaining pipeline entry at existing openings or by cutting into the pipes. New openings would be closed with grout after taking the residue sample. Inside surface radiological dose rate measurements would be taken by inserting a low energy gamma probe radiation detector into openings in the pipeline. Pipeline sections located beneath the water table would not be opened.

The second stage of the pipeline investigation would be based on the analytical results of the first stage and would use soil samples. Soil boreholes would be drilled on 5 and 20 foot spacings between test pits at which contaminated soils were found along the entire length of the pipeline. The spacing pattern would depend on whether adjacent test pits also contain contaminated soil. Boreholes would be drilled to bedrock or the water table, whichever is shallower, with a continuous core produced to that depth. Samples would be taken from up to five different locations on the core.

The first stage of the tank investigation would sample the tanks shown in Figure 17 and identified on Table 1. Tanks that would be investigated have Xs in one or more columns under Field Investigation Summary on the Table. These are OPWL tanks that are no longer in use and are not located in or under production buildings. During the course of the investigation, additional tanks that are not currently known to be part of the OPWL system may be discovered and added to the study.

Tanks would be inspected visually; by sampling residues left in the tanks; and by drilling soil boreholes around the tanks. Visual inspections would be done remotely by lowering a camera into the tank where possible. Residue or wipe samples would be taken at tanks which have not been cleaned and painted since their use was discontinued. One soil borehole would be drilled on each side of each tank that is accessible to a drilling rig, usually four boreholes per tank. Boreholes would be drilled down through the fill material surrounding each tank to the native ground below the fill. Specific borehole locations at each tank would focus on known or suspected leak locations at that tank. Soil samples would be taken at the surface prior to drilling, midway between the surface and the water table or bedrock, and directly above the water table or bedrock.

The second stage of the tank investigation would provide more detailed information about leaky tanks identified in the first stage of investigation. Additional soil boreholes would be drilled on ten foot spacings out from the tanks to delineate the extent of contamination in soils. Because each situation is expected to be different, sampling patterns would be developed on a case by case basis.

The need for a third investigative stage for pipelines and/or tanks would be determined by the outcome of the first two stages. It is anticipated that additional boreholes would be drilled in and around pipeline and tank locations where contamination was identified in the preceding stages. Leaked material is expected to have concentrated in the sand and gravel used to backfill the pipeline and tank excavations because those materials accept liquids much more readily than the tighter native soil surrounding them. Stage three boreholes would, therefore, be concentrated in the previously excavated areas, but would also be located around contaminated sites to delimit the contamination. These boreholes, like the stage two boreholes, would be 15 to 20 feet deep, or to the water table, whichever is intercepted first. The number of boreholes at each site would depend on the horizontal extent of the contamination. Because of the tight nature of the native soils, it is expected that individual sites would not extend much more than 10 feet on either side of a pipeline or 20 feet away from the area of a tank. Such boreholes would probably be on 10 to 20 foot spacings, depending on the specifics of the situation.

As seen in Figure 18, two pipeline segments may extend east of the Protected Area (PA). One is believed to go only the short distance to the sewage treatment plant near South Walnut Creek. The other line, originally laid on the surface, may have extended as far as Pond B-2, 2,000-2,500 feet east of the PA fence. This line may have already been partially or totally removed. Test pits and soil samples may be taken on 200-foot centers along these lines to document the existence of the lines and sample for contamination along their alignments. The lower portions of either or both these lines may lie within a floodplain, and some of the test pits and soil sampling sites would also be in those floodplains.

The site characterization program at OU 9 would also include sampling and field surveys of flora and fauna in the OU. Because of its location in the developed portion of RFP, much of OU 9 is covered by pavement or buildings, so habitat is limited. Figure 18, however, identifies eight sites, mostly on the fringes of the OU and the developed area, where habitat exists and biota investigations are planned.

Operable Unit 7 - Original Landfill

Ou 7 is located about 1300 feet north-northwest of the parking lot on the north edge of the Plant's Protected Area on a ridge above Walnut Creek. Figure 19 shows the location of the OU 7 field work. At the locations marked with a V, samples of vegetation and soil would be collected. Vegetation would be collected by clipping within staked grids, and soil samples would be taken with a hand held device from the top 2 to 3 inches of the ground.

A marks the sites on Figure 19 where aquatic samples would be taken at streams and ponds. Aquatic samples would include surface water, flora, fauna and sediment. Samples of surface water and sediment would be up to a few quarts of water and a few pounds of sediment collected by hand. Flora and fauna would be collected to provide population counts and tissue samples for analysis.

Categorical exclusion to be applied:

3. Site characterization and environmental monitoring, including siting, construction, or operation of characterization and monitoring devices, under CERCLA and RCRA, if these activities would not introduce or cause the inadvertent or uncontrolled movement of hazardous substances as defined in section 101(33) of CERCLA, or non-native organisms, and would not adversely affect environmentally sensitive areas (DOE NEPA Guidelines, 55FR37178).

SECTION D DETERMINATION

CATEGORICAL EXCLUSION (CX) DETERMINATION - RFO/CX010-92

Site Characterization for OU 3, 4, 7 & 9

I have determined that the proposed action meets the requirements for the CX as defined in Section D of DOE NEPA Guidelines. Therefore, I approve the categorical exclusion of the proposed action from further NEPA review and documentation.

Date 5/14/92

Signature: T Vaeth

Terry A. Vaeth
Title: Manager, Rocky Flats Office

Program Sponsor

Date: May 12, 1992

Signature: James K. Hartman

James K. Hartman
Title: Manager, Environmental Management

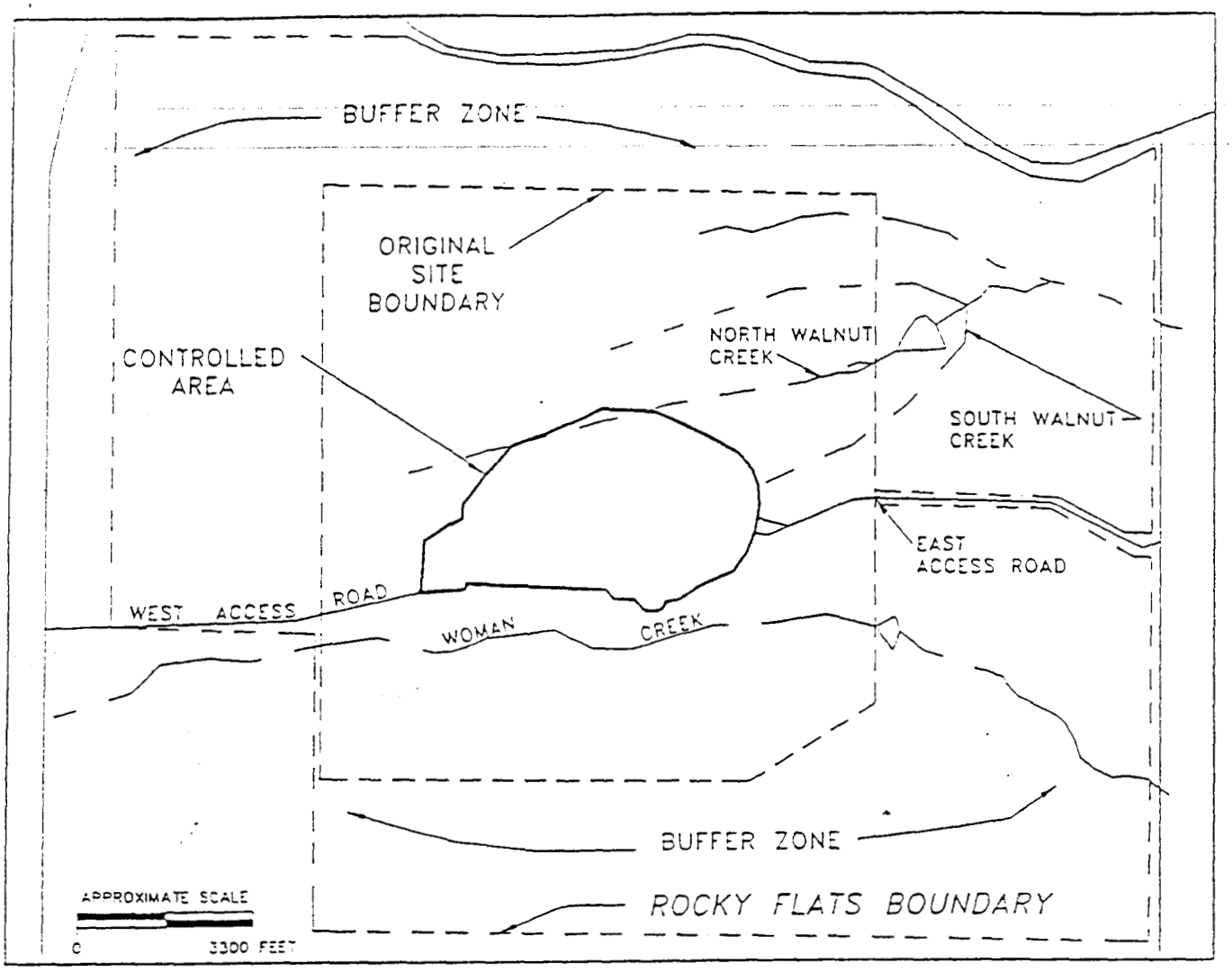
I have reviewed this action and my finding is that the CX is the appropriate level of NEPA Documentation.

Date May 4, 1992

Signature: P M Powell

Patricia M. Powell
Title: NEPA Compliance Officer

ADS # 1101, 1251, 1255, 1258



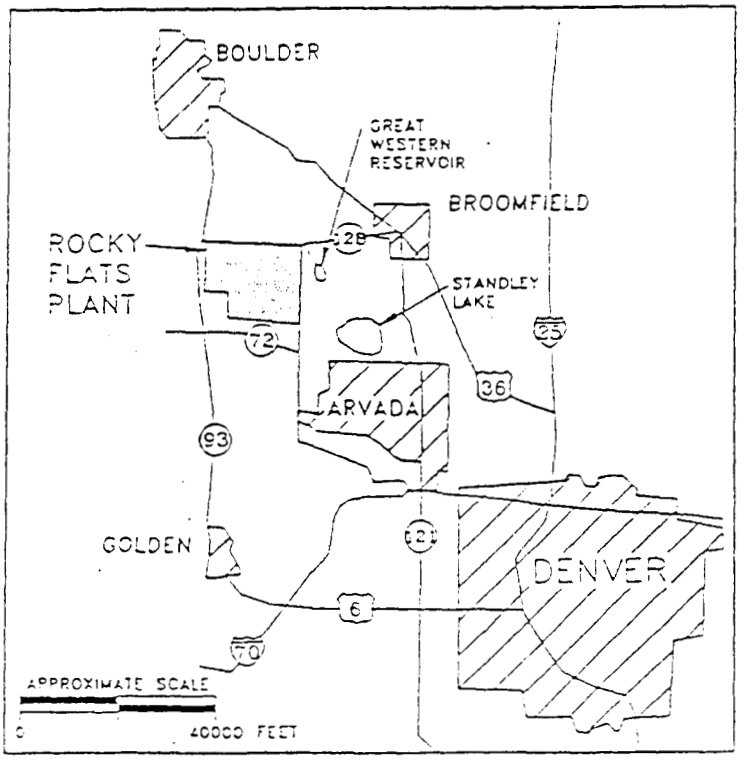


Figure 1
ROCKY FLATS LOCATION MAP

ADAPTED FROM: FIG. 1-1, E.G. & G. DRAFT GEOLOGIC CHARACTERIZATION REPORT, JAN. 3, 1990.

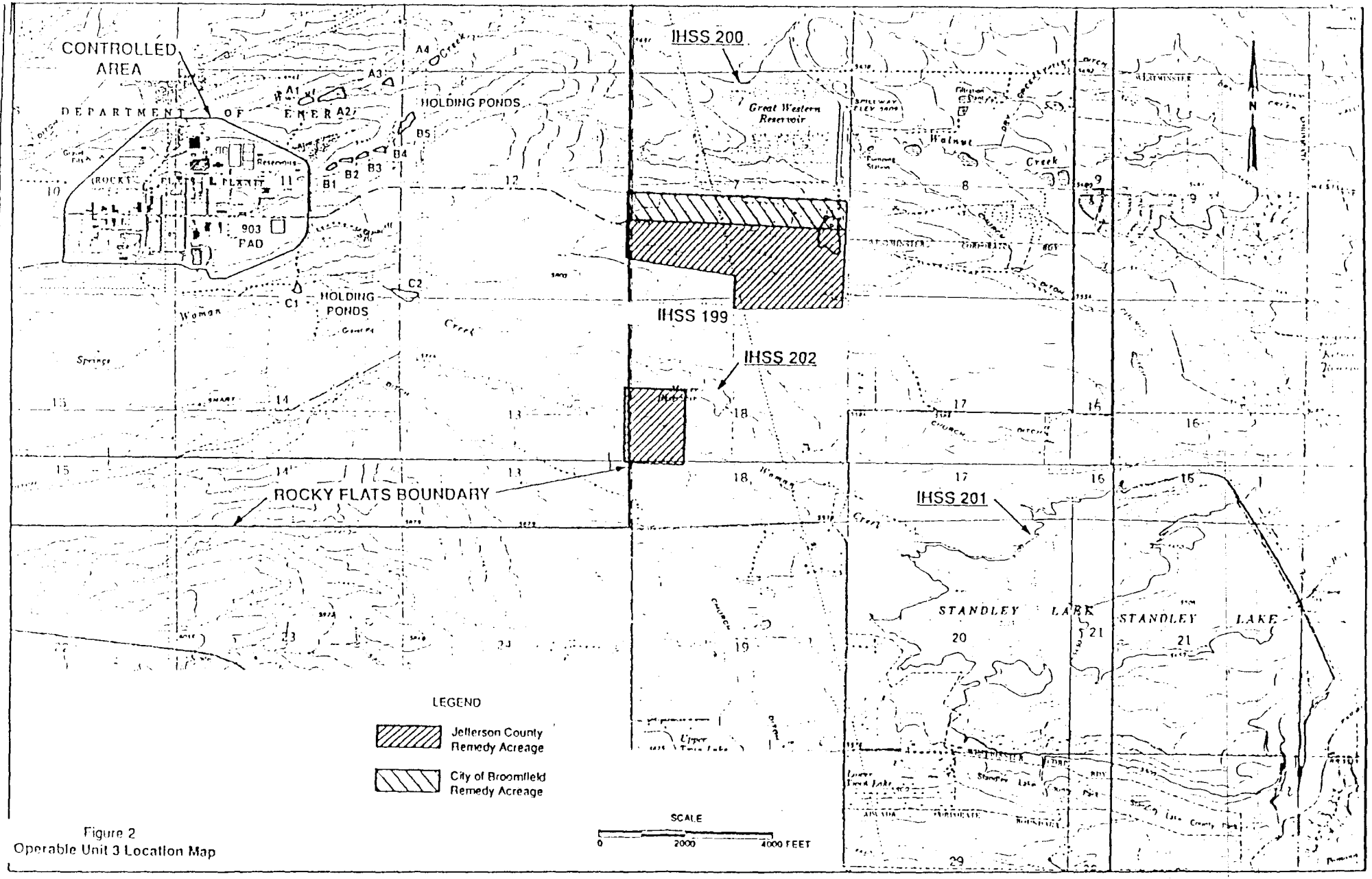


Figure 2
Operable Unit 3 Location Map

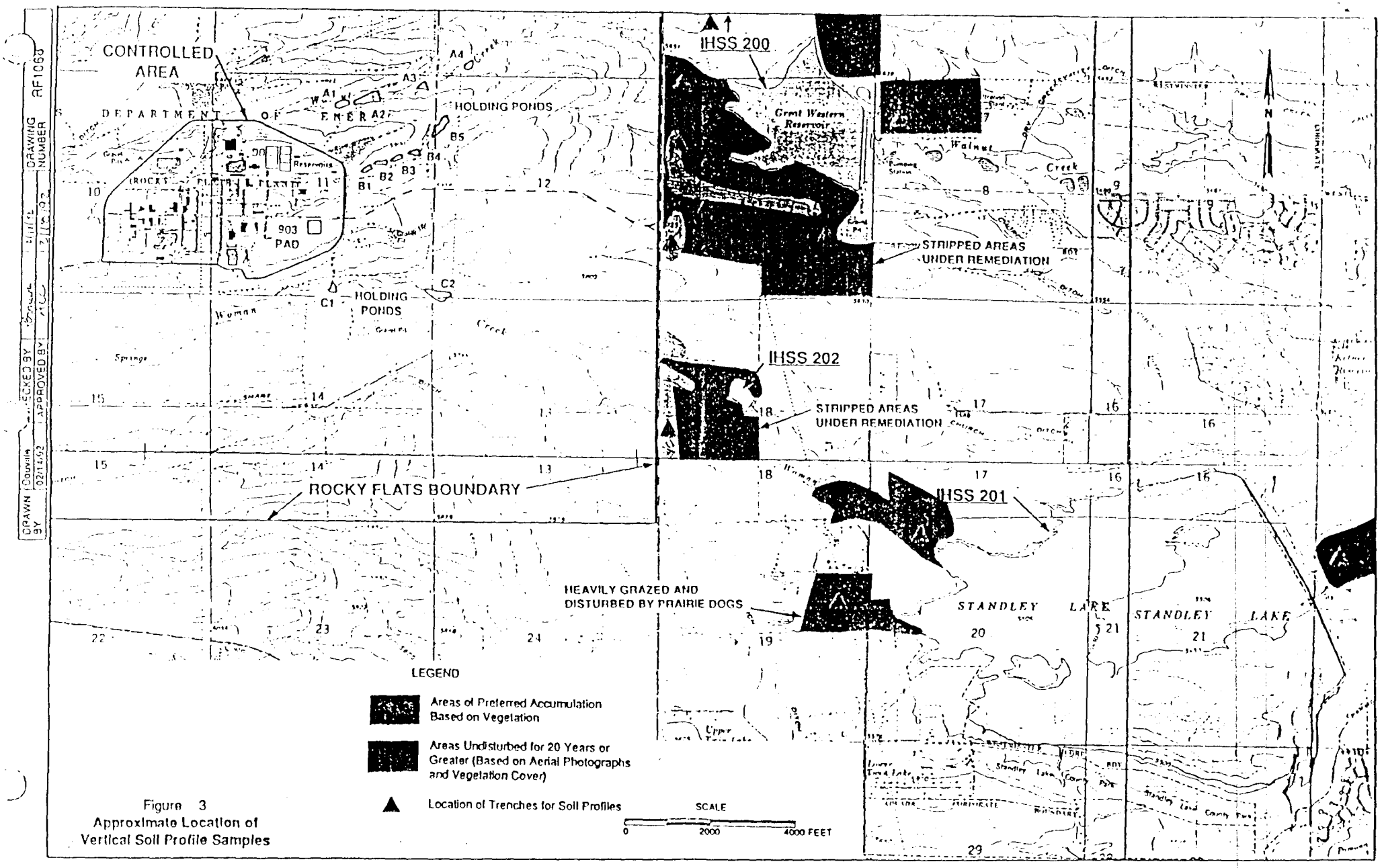


Figure 3
Approximate Location of
Vertical Soil Profile Samples

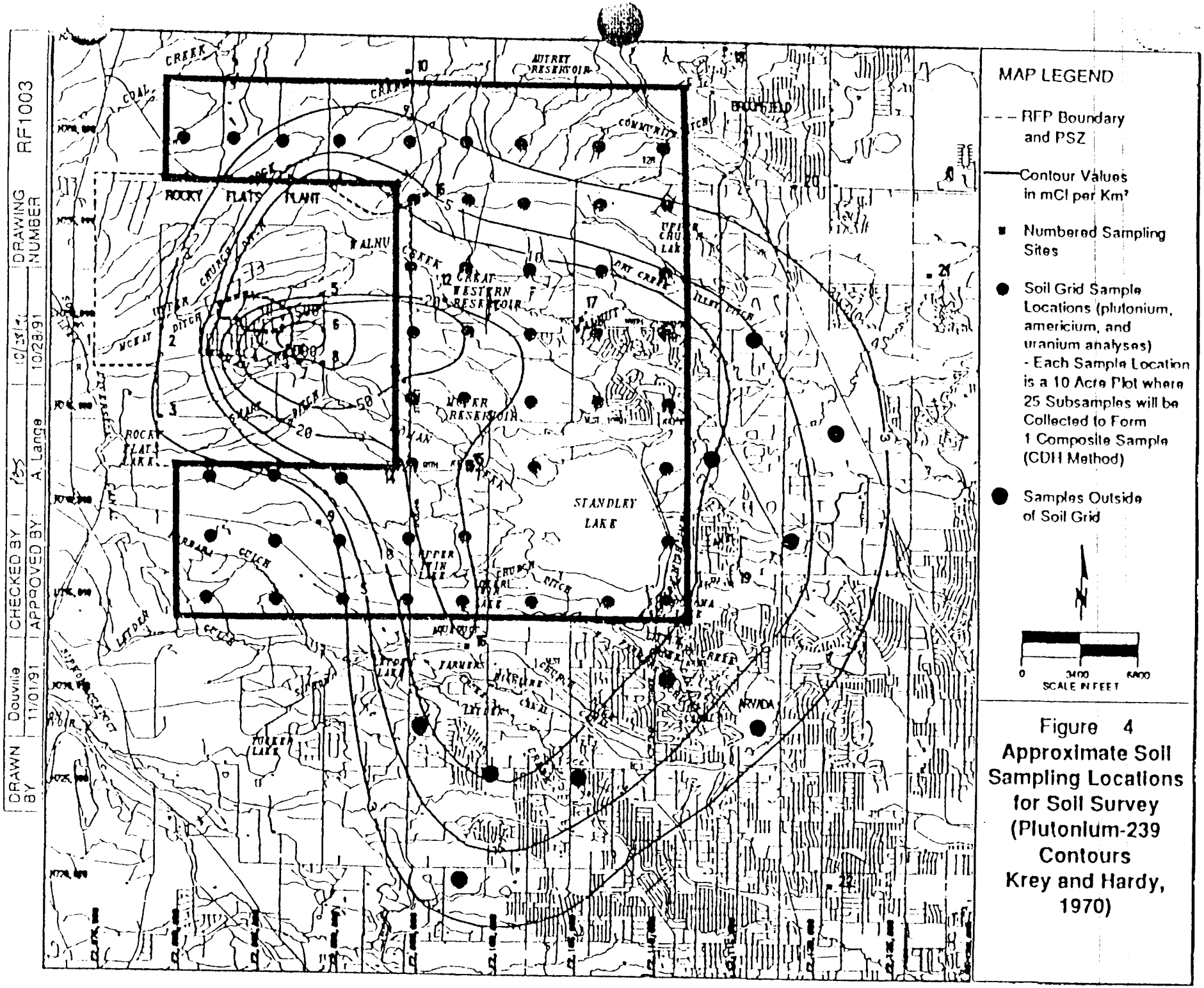


Figure 4
Approximate Soil Sampling Locations for Soil Survey (Plutonium-239 Contours Krey and Hardy, 1970)

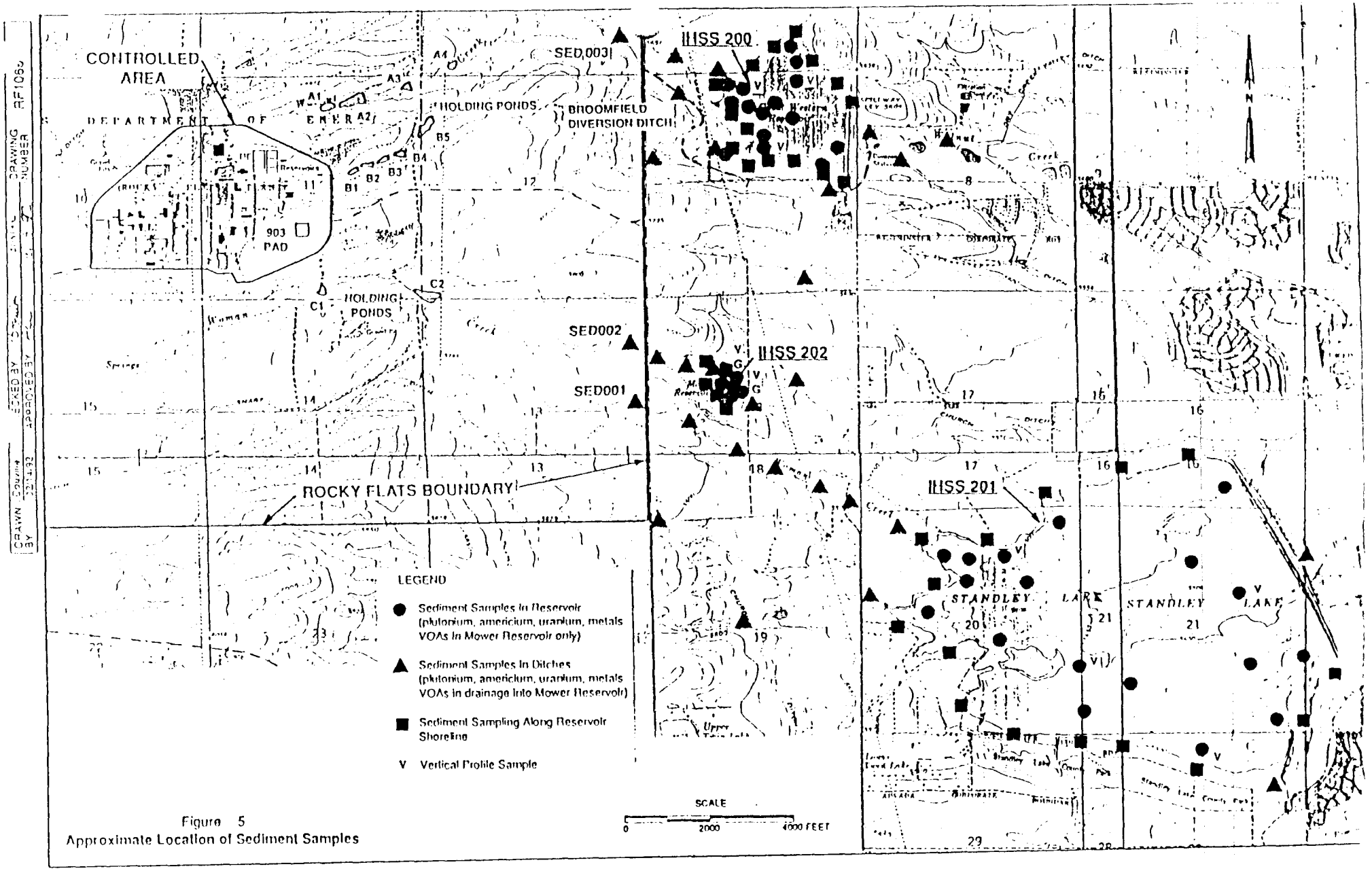


Figure 5
Approximate Location of Sediment Samples

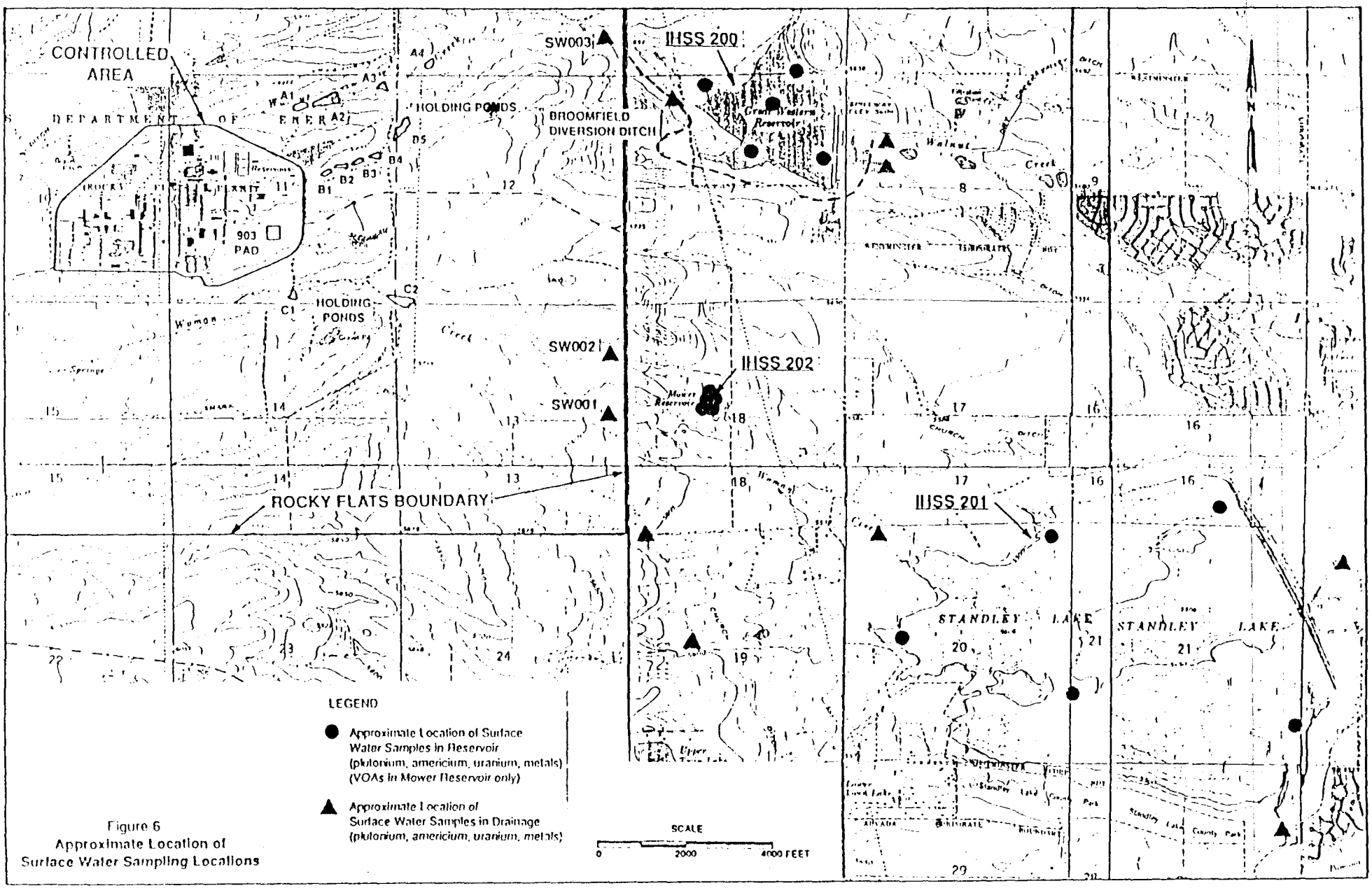


Figure 6
Approximate Location of
Surface Water Sampling Locations

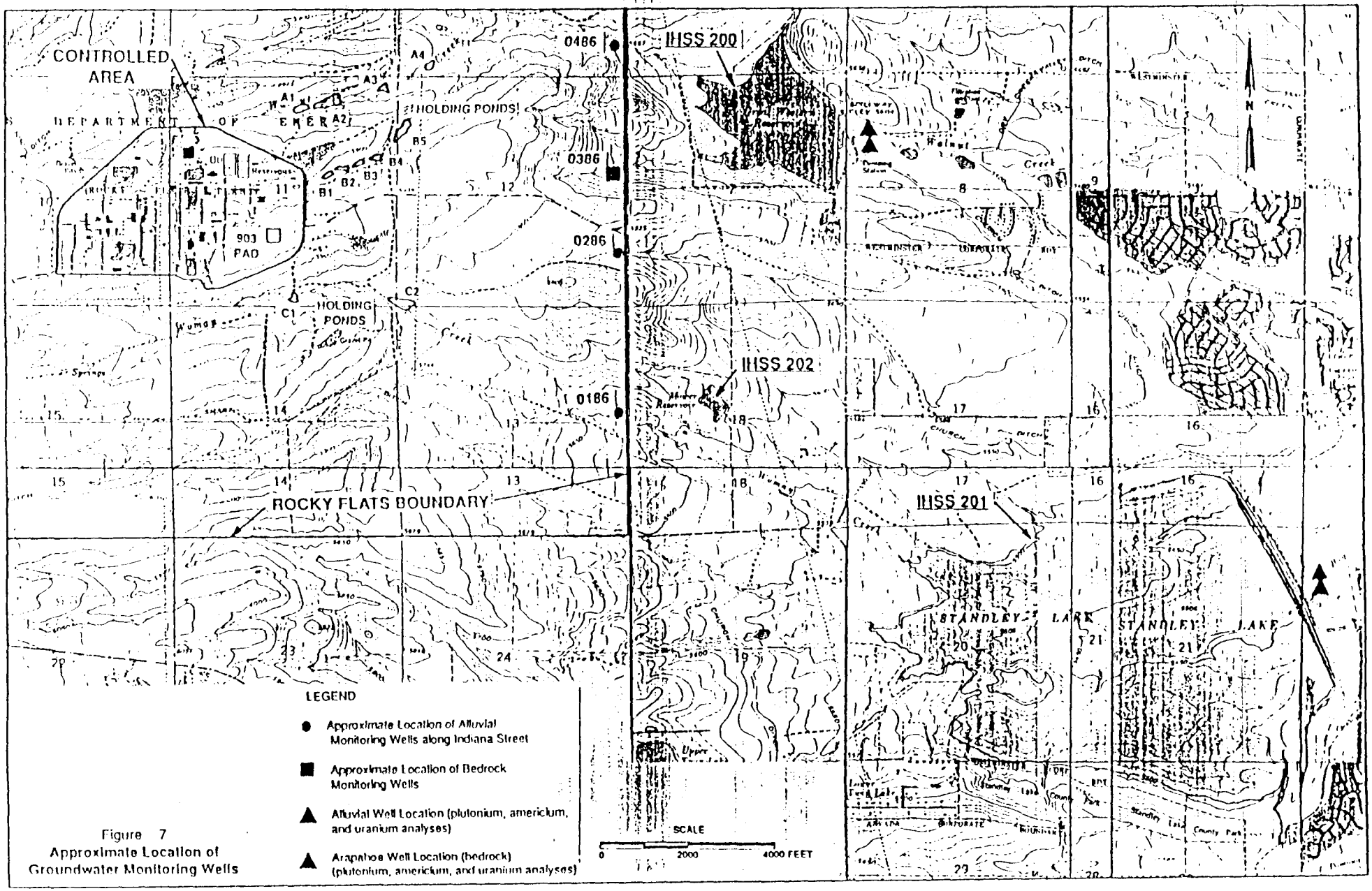


Figure 7
Approximate Location of Groundwater Monitoring Wells

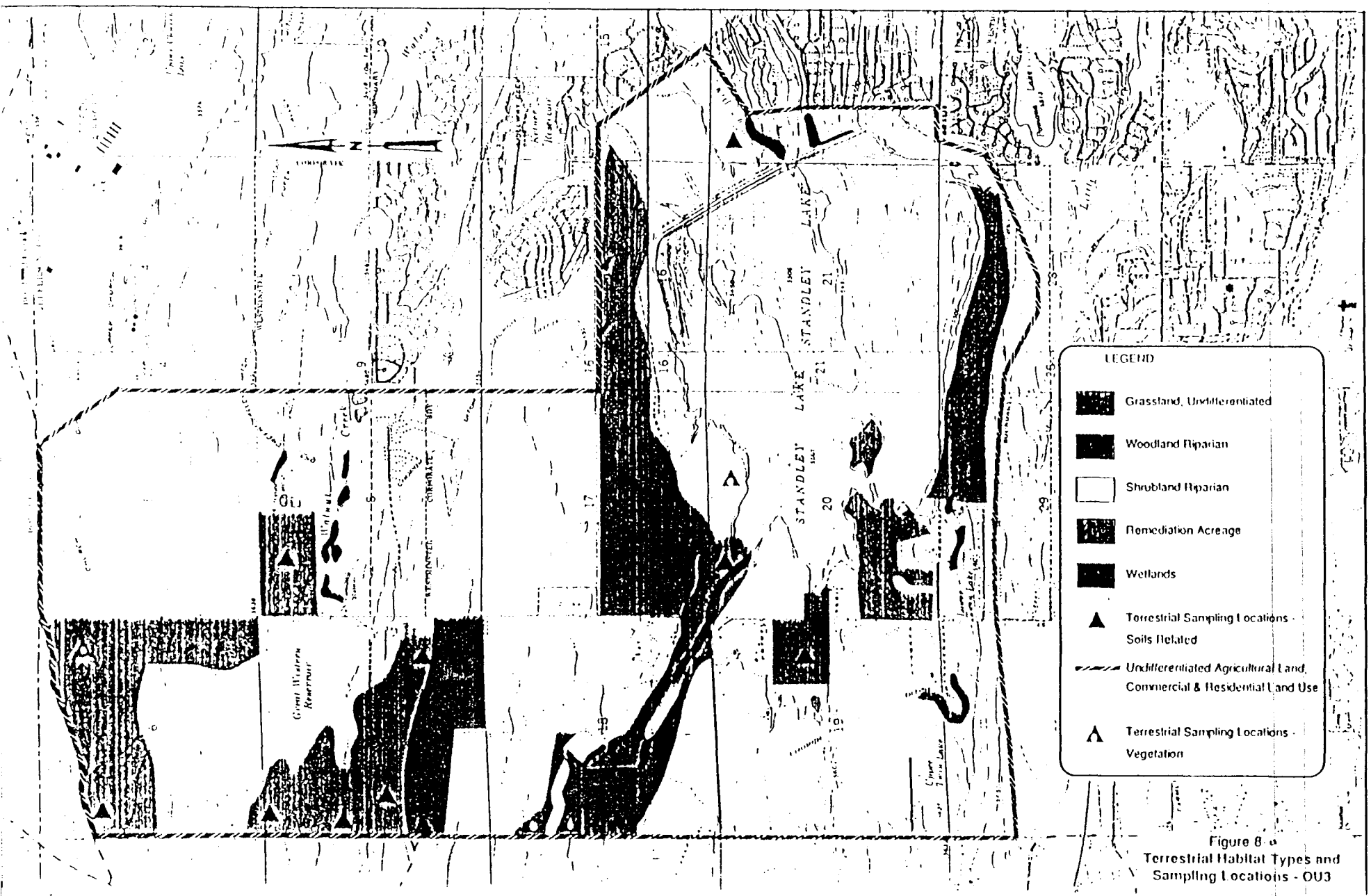


Figure 8-a
Terrestrial Habitat Types and Sampling Locations - OU3

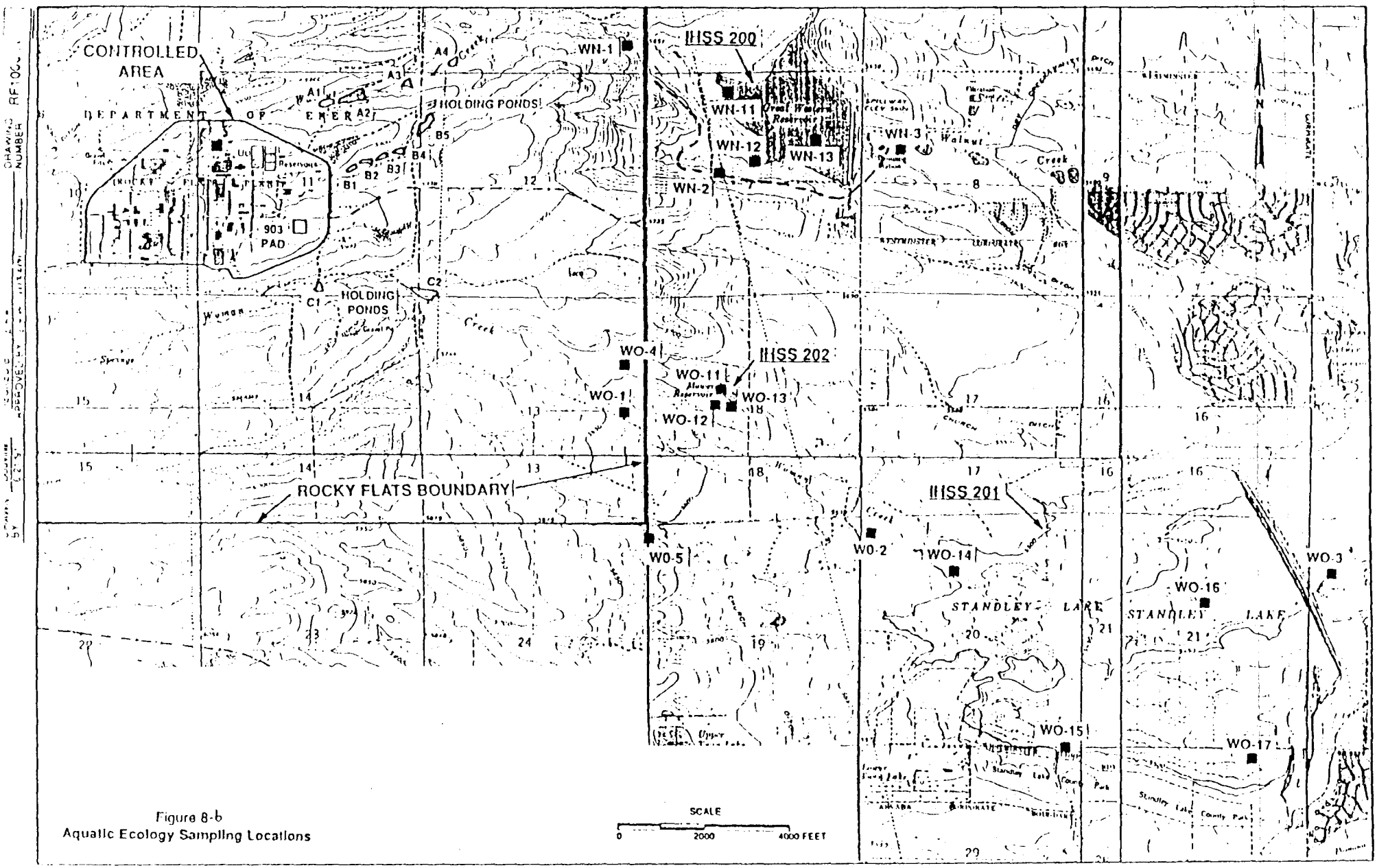
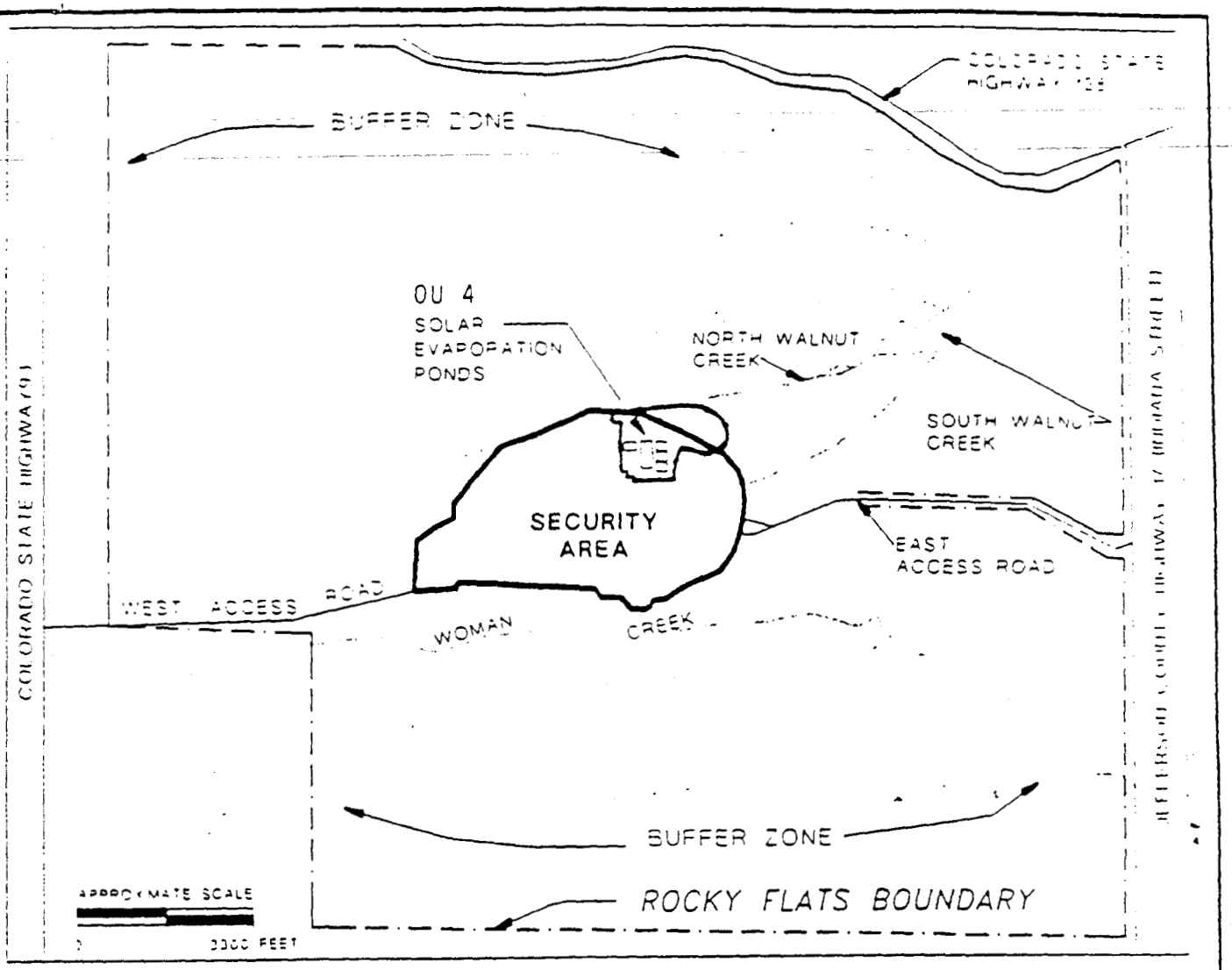
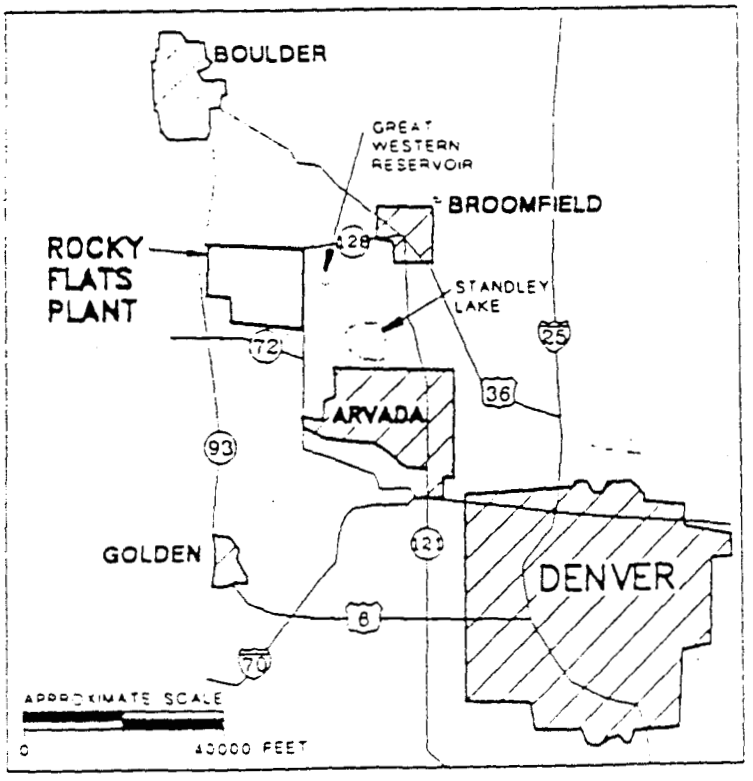


Figure 8-6
Aquatic Ecology Sampling Locations





ADAPTED FROM FIG. 1-1 E.G. & G. DRAFT GEOLOGIC CHARACTERIZATION REPORT JAN 3 1990

Figure 9

PREPARED FOR:
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant
Golden, Colorado

TITLE:
OU 4 LOCATION MAP

PROJ NO:	304909	DWG NO:	SHEET
DESIGN BY:	J. BRAND	CHECKED:	J. BRAND
DRAWN BY:	R. HYNA	APPROVED:	J. BRAND
DATE:		SCALE:	

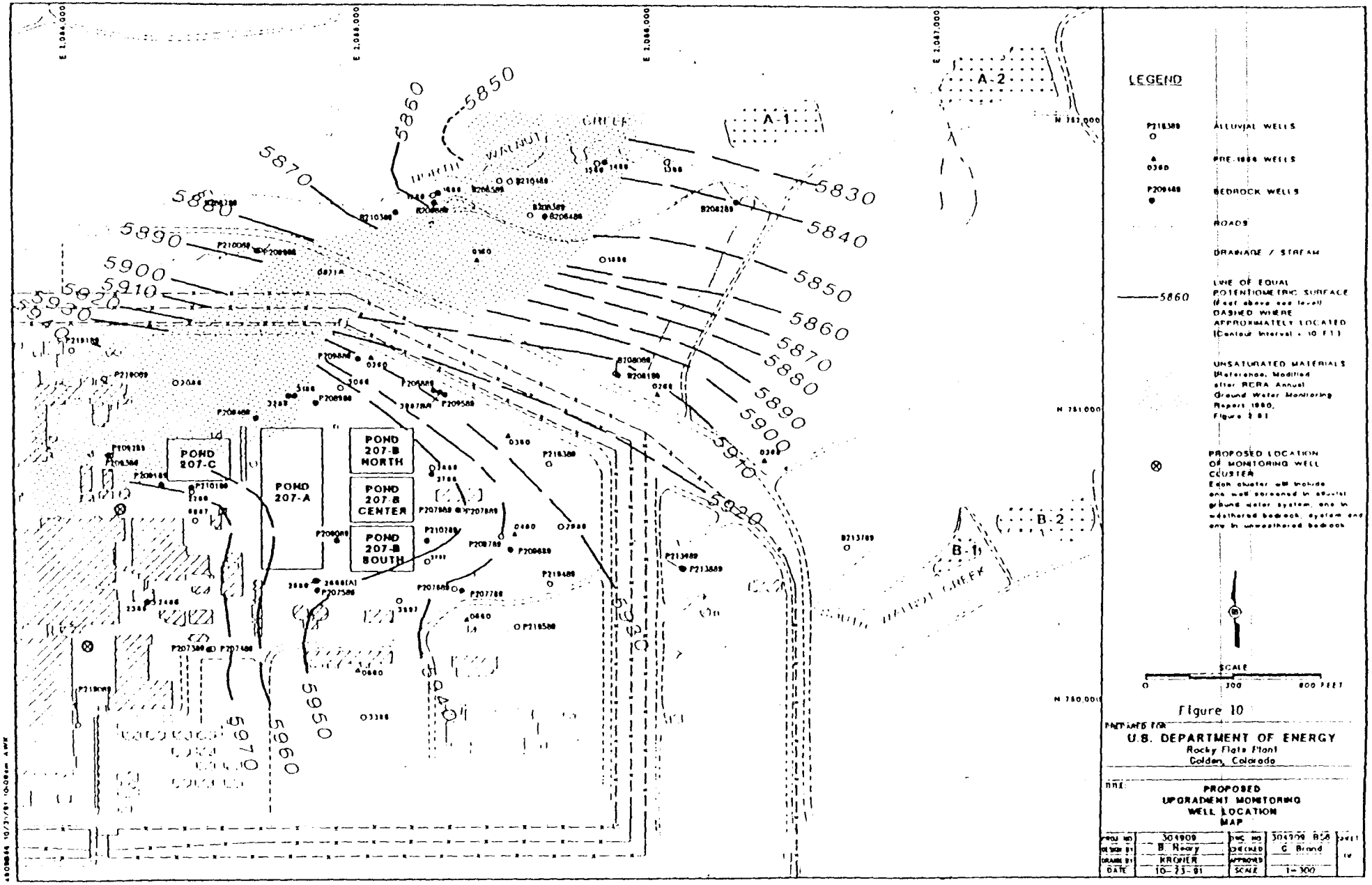


Figure 10

PREPARED FOR
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant
Golden, Colorado

TITLE
PROPOSED
UPGRADIENT MONITORING
WELL LOCATION
MAP

PROJ NO	304909	DWG NO	304909 B58
DESIGN BY	B. Neary	CHECKED	G. Brand
DRAWN BY	KROPER	APPROVED	
DATE	10-23-91	SCALE	1=300

SHEET 1 OF 1

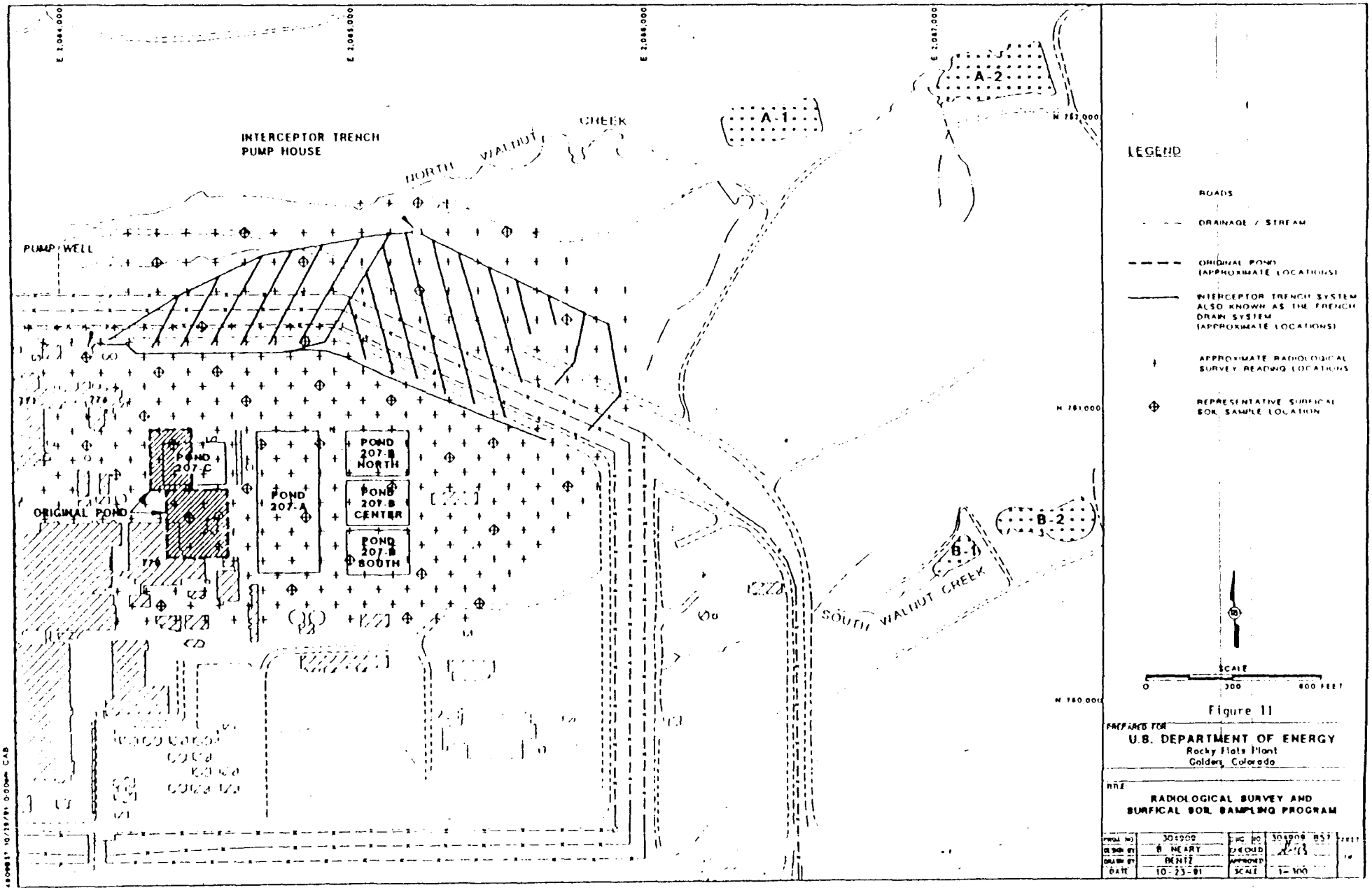


Figure 11

PREPARED FOR
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant
Golden, Colorado

TITLE
RADIOLOGICAL SURVEY AND SURFICAL SOIL SAMPLING PROGRAM

PROJ. NO.	304900	DWG. NO.	304900 BS1
DESIGN BY	B. HEARY	CHECKED	
DRAWN BY	BENTZ	APPROVED	
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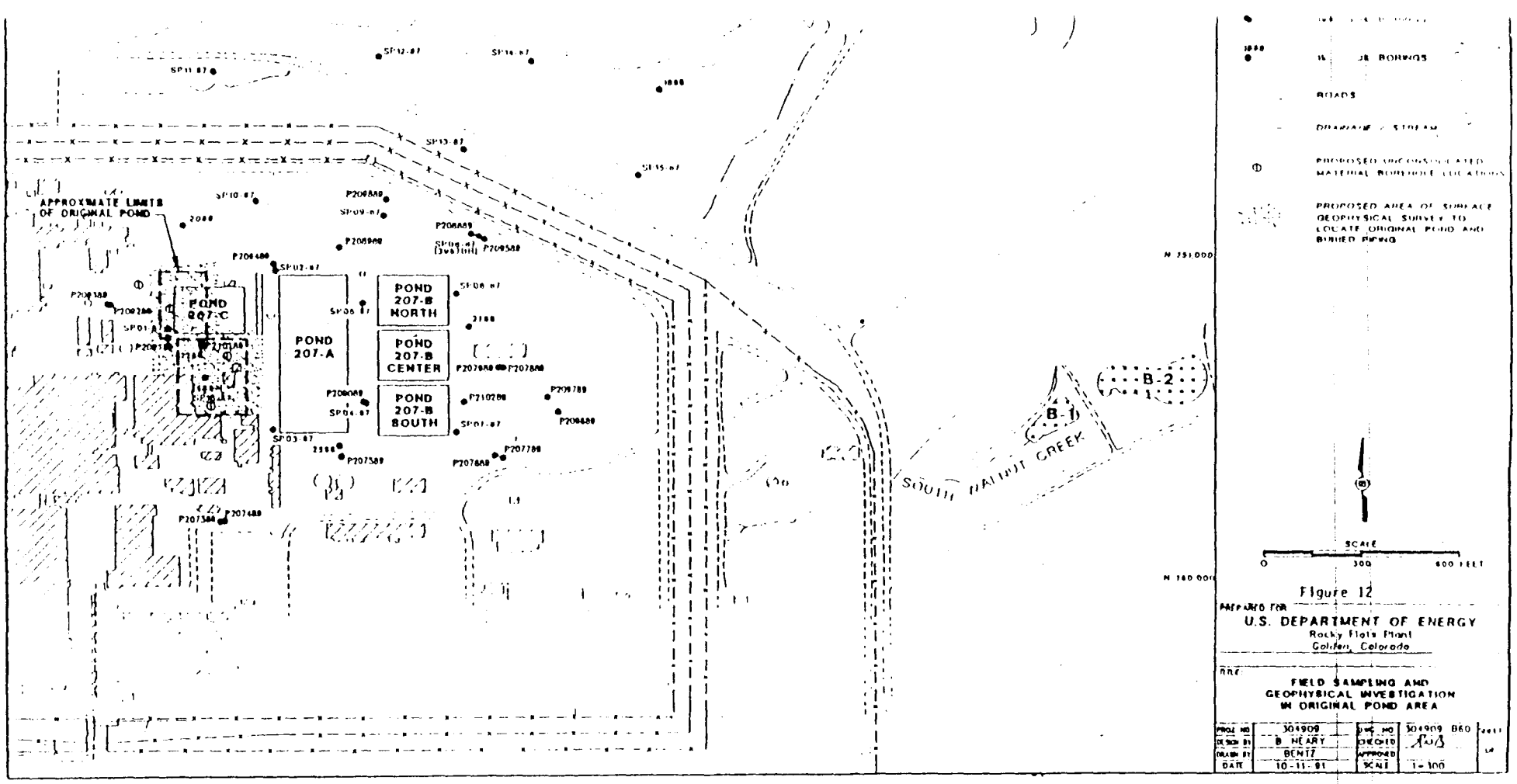


Figure 12

PREPARED FOR
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant
Golden, Colorado

TITLE
FIELD SAMPLING AND GEOPHYSICAL INVESTIGATION IN ORIGINAL POND AREA

PROJ NO	304909	DWG NO	304909 B60
DESIGN BY	B HEARY	CHECKED	
DRAWN BY	BENTZ	APPROVED	
DATE	10-11-91	SCALE	1-300

DRAWN BY	BENTZ	APPROVED	C.T.R.
DATE	10-23-91	SCALE	1-300

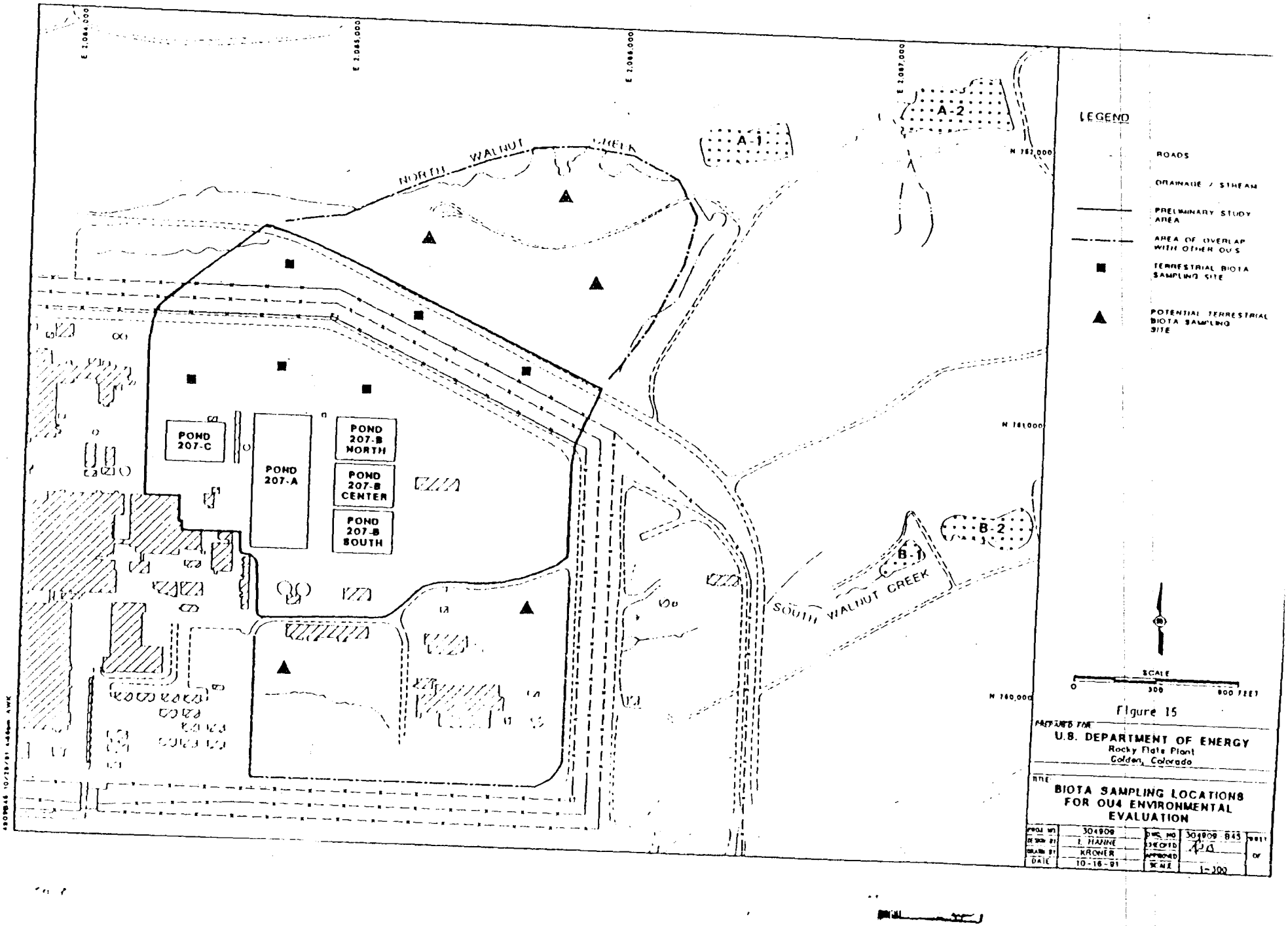
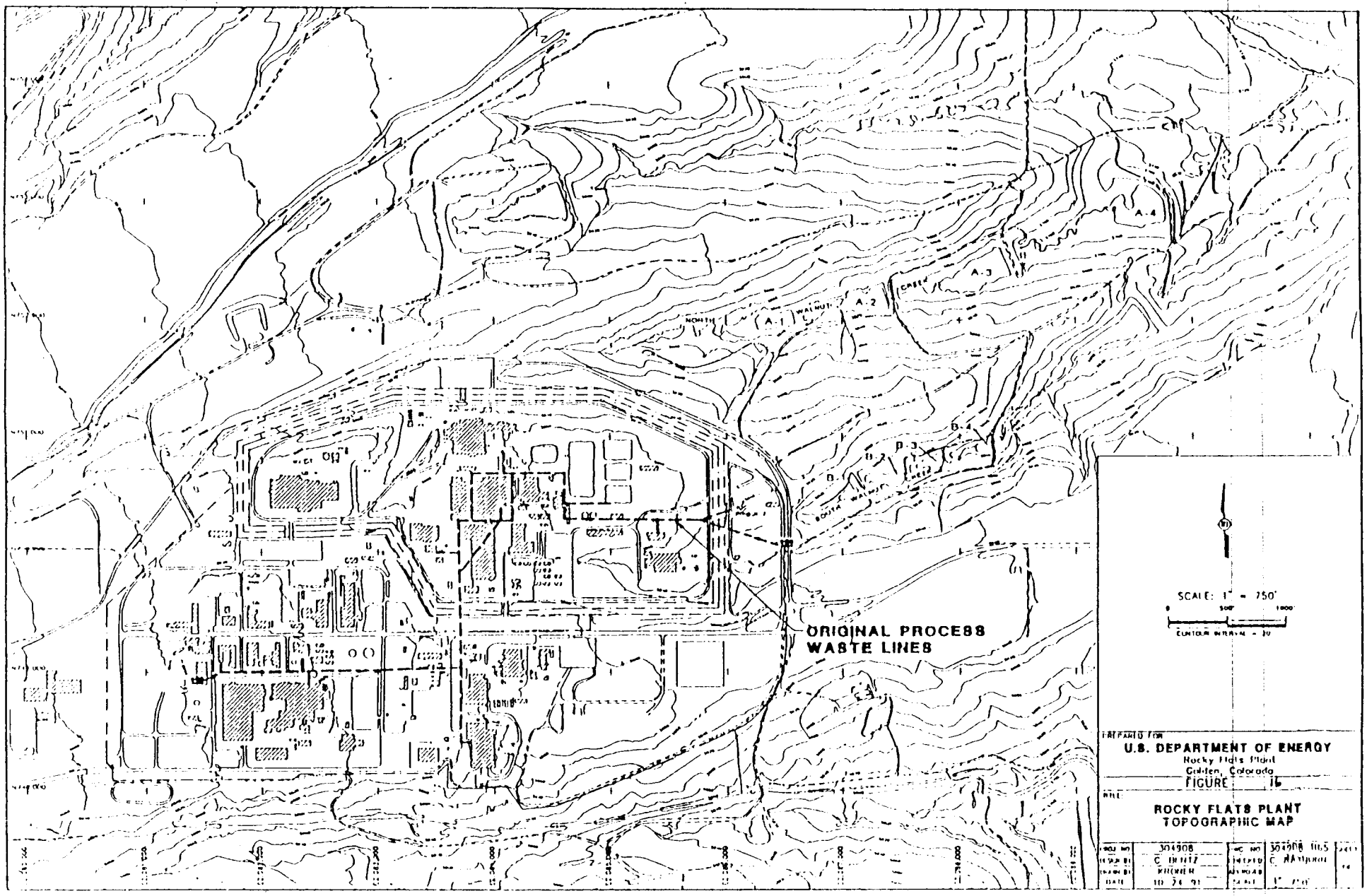


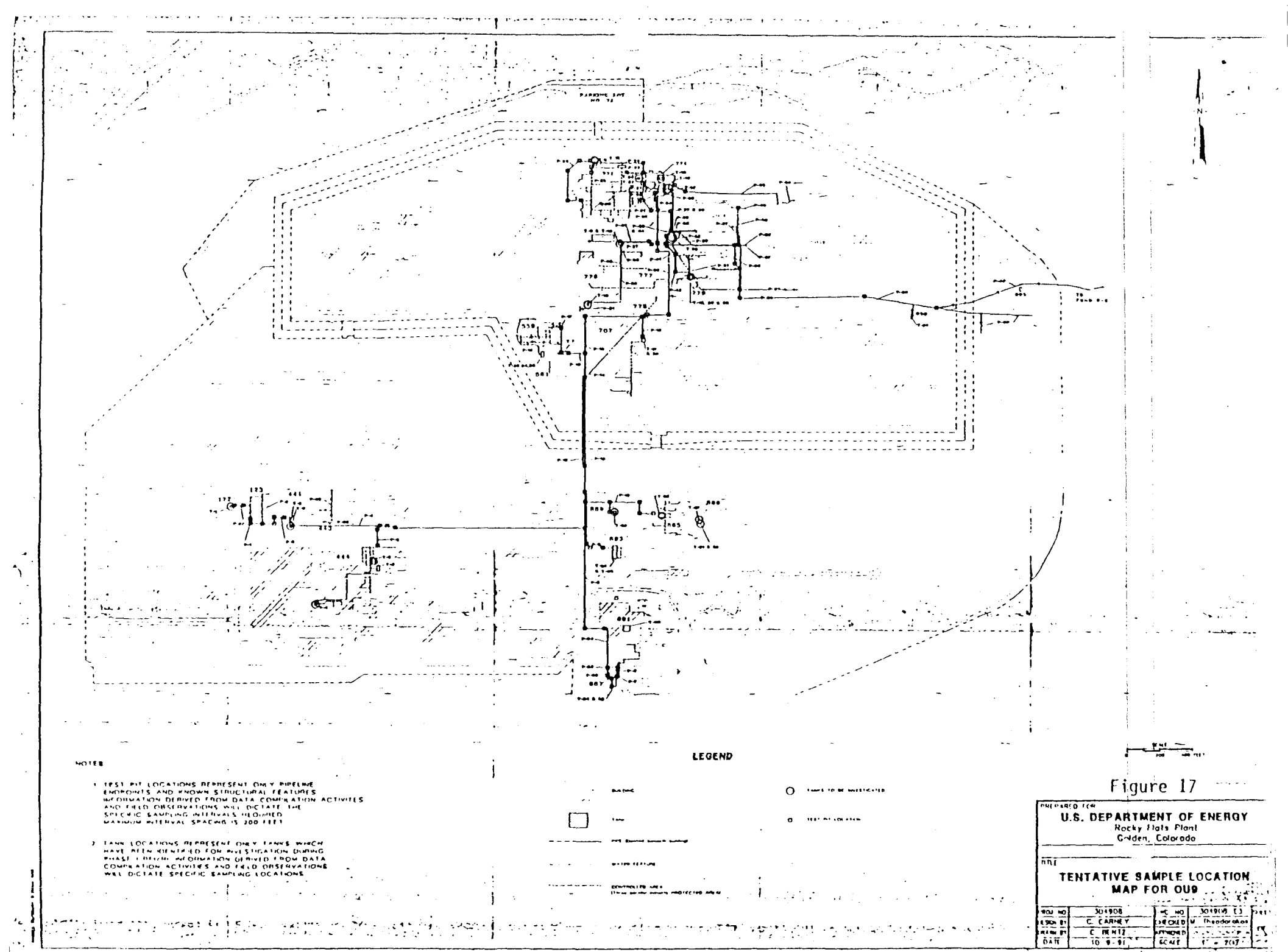
Figure 15

PREPARED FOR
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant
Golden, Colorado

TITLE
BIOTA SAMPLING LOCATIONS FOR OU4 ENVIRONMENTAL EVALUATION

PROJ. NO.	304909	DWG. NO.	304909 B45
DESIGNED BY	T. HANNE	CHECKED	
DRAWN BY	KROMER	APPROVED	
DATE	10-16-91	SCALE	1=300


ORIGINAL PROCESS WASTE LINES
SCALE: 1" = 750'
0
500'
1000'
CONTOUR INTERVAL = 20
PREPARED FOR
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant
Golden, Colorado
FIGURE 16
TITLE:
ROCKY FLATS PLANT
TOPOGRAPHIC MAP
304908
C. BENTZ
KROEGER
10 24 91
304908 1105
C. HAYWORTH



NOTES

1. TEST PIT LOCATIONS REPRESENT ONLY PIPELINE ENDPOINTS AND KNOWN STRUCTURAL FEATURES. INFORMATION DERIVED FROM DATA COMPILATION ACTIVITIES AND FIELD OBSERVATIONS WILL DICTATE THE SPECIFIC SAMPLING INTERVALS REQUIRED. MAXIMUM INTERVAL SPACING IS 200 FEET.

2. TANK LOCATIONS REPRESENT ONLY TANKS WHICH HAVE BEEN IDENTIFIED FOR INVESTIGATION DURING PHASE I DRIVE. INFORMATION DERIVED FROM DATA COMPILATION ACTIVITIES AND FIELD OBSERVATIONS WILL DICTATE SPECIFIC SAMPLING LOCATIONS.

LEGEND

Figure 17

PREPARED FOR
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant
Golden, Colorado

TENTATIVE SAMPLE LOCATION MAP FOR OU9

WBS NO	304908	HC NO	304908 E3
DESIGN BY	C. CARNEY	CHECKED	M. Theodorakos
DRAWN BY	C. RENTZ	APPROVED	
DATE	10-9-91	SCALE	1" = 200'

TABLE 1

FIELD INVESTIGATION PLAN SUMMARY FOR OPWL TANKS

TANK LOCATION	FIELD INVESTIGATION SUMMARY			EXPLANATION[1]
	INSPEC-TION	WASTE SPLS.	SOIL SPLS.	
T-1			X	One underground tank, removed, outside Building 122
T-2				One underground tank, abandoned, beneath south wing of Building 441
T-3	X	X	X	One aboveground tank, abandoned, outside Building 441 One underground tank, abandoned, inside Building 441 process waste pit (Building 429)
T-4	X	X		Three floor sumps, active (incidental spill control), inside Building 447 basement
T-5				Two abovegrade tanks, active (Part B Hazardous & Low-Level Permit Application Unit Nos. 40.04 and 40.05), inside Building 444 basement
T-6	X	X		Two floor sumps, active (foundation drainage), inside Building 444 basement
T-7				Two abovegrade tanks, active (90-day transuranic waste accumulation tanks, Unit Nos. 522 and 523), inside Building 559 process waste pit (Building 528)
T-8	X	X	X	Two underground tanks, converted to plenum deluge system, inside Building 771 process waste pit (Building 728)
T-9, T-10	X	X	X	Four underground tanks, two converted to plenum deluge system, two abandoned, inside Building 776 process waste pit (Building 730)
T-11, T-30				T-11: Two underground sumps, active (Part B Secondary Containment Reference No. 2011), inside Building 707 process waste pit (Building 731) T-30: One underground sump, active (Part B Secondary Containment Reference No. 2011), Building 707 process waste pit (Building 731; T-30 is the Building 731 structure itself)
T-12				Not a valid OPWL tank location
T-13	X	X		One underground sump, abandoned, inside Building 774 basement
T-14, T-16	X	X	X	Three underground tanks, abandoned, outside Building 774

TABLE [1]

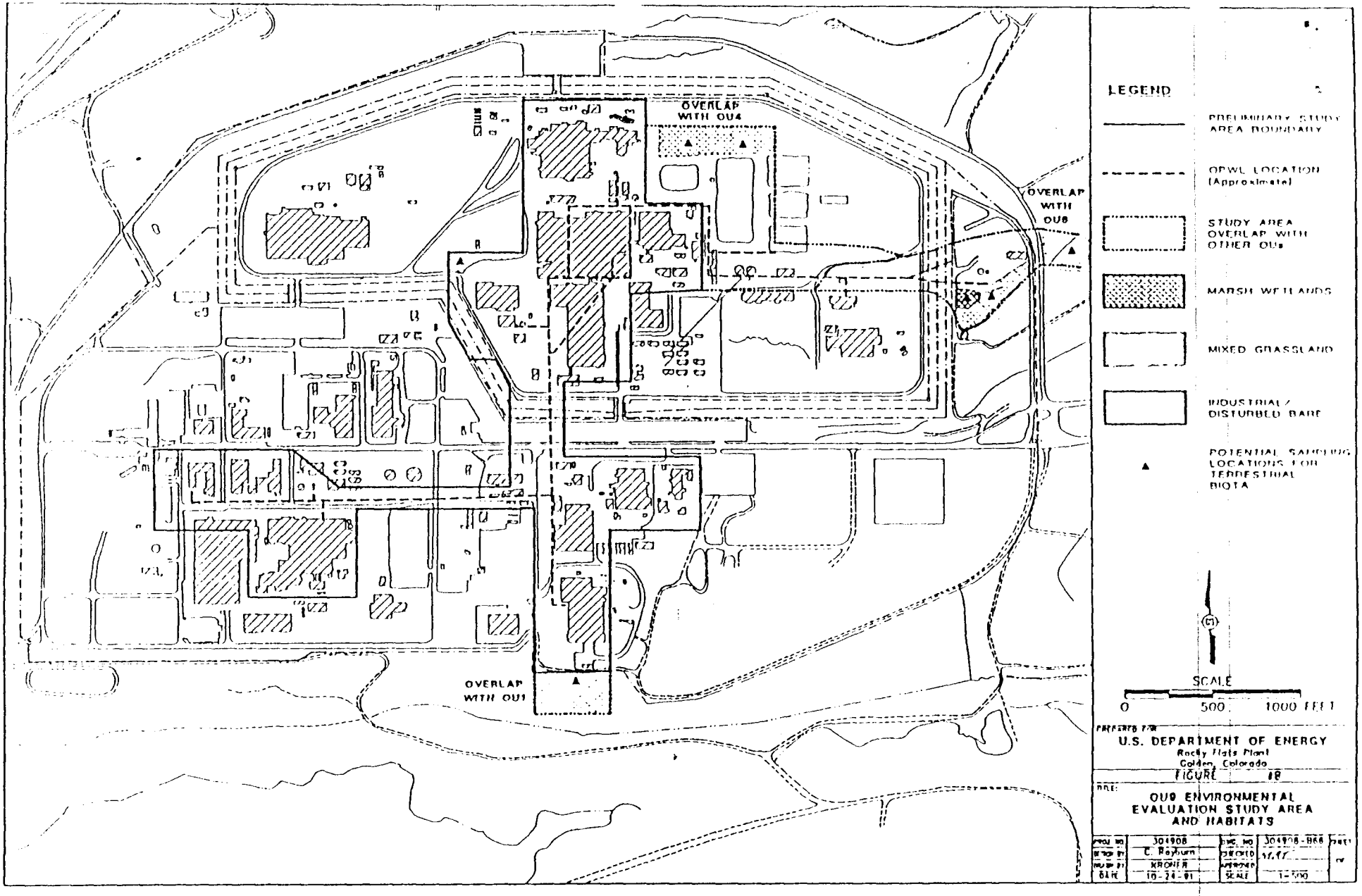
FIELD INVESTIGATION PLAN SUMMARY FOR OPWL TANKS
(Continued)

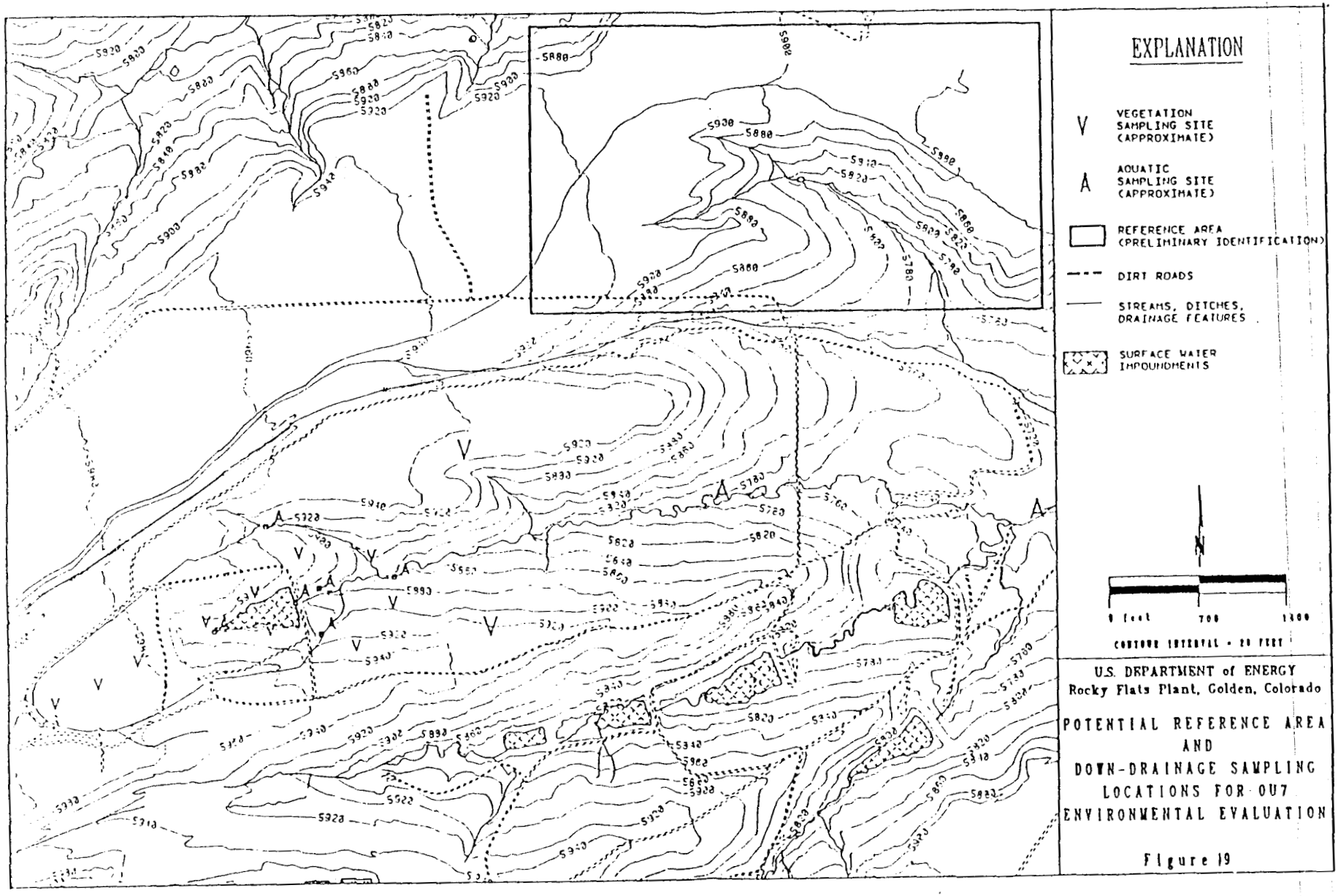
TANK LOCATION	FIELD INVESTIGATION SUMMARY			EXPLANATION[1]
	INSPEC-TION	WASTE SPLS.	SOIL SPLS.	
T-15, T-17				Six underground tanks, removed, beneath south wing of Building 774
T-18	X	X		One underground sump, abandoned, inside Building 778
T-19, T-20	X			Four underground sumps, two converted to plenum deluge system, two abandoned, all cleaned and painted after removal from process waste system, in Building 779 basement
T-21, T-22	X	X	X	T-21: One floor sump, abandoned, inside Building 886 process waste pit (Building 828) T-22: Two abovegrade tanks, abandoned, inside Building 886 process waste pit (Building 828)
T-23	X			One underground sump, abandoned (but presently contains the base of the Building 865 electron beam furnace), cleaned and painted, inside Building 865
T-24, T-32				T-24: Seven abovegrade tanks, active (Part B Hazardous and Low-Level Mixed Permit Application Unit Nos. 40.20 - 40.26), inside Building 881 process waste pit (Building 887). T-32: One underground sump, active (Part B Secondary Containment Reference No. 2014), Building 881 process waste pit (Building 887; T-32 is the Building 887 structure itself)
T-25, T-26				T-25: Two abovegrade tanks, active (Part B Hazardous and Low-Level Mixed Permit Application Unit Nos. 40.30 and 40.31), inside Building 883 T-26: Three abovegrade tanks, active (Part B Hazardous and Low-Level Mixed Permit Application Unit Nos. 40.39 - 40.41), inside Building 883
T-27			X	One abovegrade tank, removed, outside Building 886
T-28	X	X		Two floor sumps, active (incidental spill control), inside Building 889

TABLE 1

FIELD INVESTIGATION PLAN SUMMARY FOR OPWL TANKS
(Continued)

TANK LOCATION	FIELD INVESTIGATION SUMMARY			EXPLANATION[1]
	INSPEC-TION	WASTE SPLS.	SOIL SPLS.	
T-29	X	X	X	One on-grade tank, abandoned, outside Building 774
T-31				Not a valid OPWL tank location
T-33, T-34, T-35				Not valid OPWL tank locations
T-36, T-37	X	X		Two underground sumps, abandoned, inside Building 771C
T-39				Four abovegrade tanks, removed, former tank location has been thoroughly cleaned and decon-taminated, inside Building 881


OVERLAP WITH OU4
OVERLAP WITH OU8
OVERLAP WITH OU1
LEGEND
PRELIMINARY STUDY AREA BOUNDARY
OPWL LOCATION (Approximate)
STUDY AREA OVERLAP WITH OTHER OUs
MARSH WETLANDS
MIXED GRASSLAND
INDUSTRIAL / DISTURBED BARE
POTENTIAL SAMPLING LOCATIONS FOR TERRESTRIAL BIOTA
SCALE
0 500 1000 FEET
PREPARED FOR
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant
Golden, Colorado
FIGURE 1R
TITLE:
OU9 ENVIRONMENTAL EVALUATION STUDY AREA AND HABITATS
PROJ. NO. 304908
DWG. NO. 304908-B68
DRAWN BY C. Rayburn
CHECKED
REVISED BY KROMER
APPROVED
DATE 10-24-91
SCALE 1"=500'
REV


EXPLANATION
V VEGETATION SAMPLING SITE (APPROXIMATE)
A AQUATIC SAMPLING SITE (APPROXIMATE)
REFERENCE AREA (PRELIMINARY IDENTIFICATION)
DIRT ROADS
STREAMS, DITCHES, DRAINAGE FEATURES
SURFACE WATER IMPOUNDMENTS
N
0 feet
700
1400
CONTOUR INTERVAL = 20 FEET
U.S. DEPARTMENT of ENERGY
Rocky Flats Plant, Golden, Colorado
POTENTIAL REFERENCE AREA AND DOWN-DRAINAGE SAMPLING LOCATIONS FOR OU7 ENVIRONMENTAL EVALUATION
Figure 19

The Department of Energy (DOE) proposes a project at the Rocky Flats Plant (RFP), located north of Golden, CO, portions of which would take place within 100-year floodplains. The location of RFP is shown in Figure 1. The project is the collection of surface water, ground water, soil, sediment and air samples to identify the nature and extent of contamination. In addition, field surveys and sampling of terrestrial and aquatic biota would be conducted. The site characterization work would be located in Operable Unit (OU) 3 (Off-site Areas), OU 4 (Solar Evaporation Ponds), OU 9 (Original Process Waste Lines) and OU 7 (Present Landfill) and would start in 1992. Most of the work is expected to occur during 1992, though some would continue into 1993 and later.

PROJECT DESCRIPTION

OU 3

OU 3 is located on lands adjacent to the RFP site immediately to the east of the Plant's buffer zone as shown in Figure 2. Vertical soil profile trenches, measuring approximately 9 feet long, 5 feet wide and 4 feet deep, would be dug by a backhoe. Exact locations of the trenches have not been determined, but six trenches are proposed in the general locations shown in Figure 3 which could place them in a floodplain. Eleven samples would be collected from various depths in each trench. A trench can usually be dug and backfilled within a day. The soil removed from the trench would be used to backfill it.

Surficial soil samples would be collected within approximately 12 miles of RFP as shown in Figure 4. Surface soil scrapes would be taken with a small, hand held device which collects 2 to 3 tablespoons of soil from the top one-quarter inch of the ground. Twenty-five soil scrapes would be taken from each of sixty 10-acre areas on or adjacent to RFP. Virtually any of the soil scrapes has the potential to be taken from within a floodplain.

Sediment samples would be obtained in OU 3 from the sites indicated in Figure 5. Sediment sampling involves single or repeated visits to sampling stations to collect up to a few pounds of sediments manually. Both new and existing sediment sampling stations would be used. A new sediment sampling station is established by driving a metal fence post into the ground to mark a site which can be returned to in the future. Some of the sediment sampling stations are, or would be, located on streams or ditches while others would be located on the shores or under the waters of ponds, lakes or reservoirs. Vertical sediment profile samples would be taken from reservoir bottoms by dropping a tube through the water into the sediment. The bottom of the tube closes and up to three feet of sediment can be withdrawn for analysis. Sediment grab samples would also be taken from the top 2 to 3 inches of reservoir bottoms. By their nature, all sediment sampling stations and sediment sample collection activities would be in floodplains.

Surface water would be sampled at the locations shown in Figure 6. Surface water sampling involves single or repeated visits to sampling locations to gather up to a few gallons of water. Both new and existing surface water sampling stations would be used. A new surface water sampling station is established by driving a metal fence post into the ground to mark a site which can be returned to in the future. Some of the surface water sampling stations are, or would be, located on streams or ditches while others would be located on the shores or waters of

ponds, lakes or reservoirs. By their nature, virtually all surface water sampling stations and sample collection activities would be in floodplains.

Four new ground water monitoring wells would be drilled within OU 3. Two would be immediately below the dams of both Great Western Reservoir and Standley Lake as shown in Figure 7. These locations are in the floodplains of Walnut and Big Dry Creeks respectively. In well drilling, the advancing drill bit produces cuttings which are shoveled into drums pending analysis for contaminants, storage, treatment and ultimate disposal. Wells are characteristically on the order of 6 inches in diameter and 15 to 60 feet deep, though some may be deeper. Once the well is in place, a casing is installed to ensure the integrity of the well and enable the well to draw water from the intended depths. When they have served their purpose, the wells would be abandoned in accordance with RFP standard operating procedures (plugging and capping). To collect water samples from ground water monitoring wells, a collection device is lowered into a well where it fills with water. The device is then pulled back to the surface and the water is poured into another container.

Site characterization work at OU 3 would include establishment and operation of air and meteorological monitoring stations. Three types of air sampling and meteorological monitoring would occur at OU 3. The locations of all three activities are shown in Figure 7. The first activity would be installation of three new high volume air samplers. Two of the samplers would be located at Standley Lake while the third would be at a site to be selected in a residential area near the Lake. An air sampler is a piece of equipment housed in a stainless steel box approximately two feet on each side. Installation of an air sampler involves pouring a concrete pad on which the air sampler is mounted and bringing electric power to the site. The concrete pads and the samplers would be removed when the study is completed. One of the samplers would be located in or near the southwestern floodplain of Standley Lake but in an area unlikely to be inundated by anything other than a large (50 or 100 year) storm event.

The second activity is installation of two new meteorological monitoring stations. Each of the stations consists of a 6-meter tower on a small concrete pad. The towers may be fenced for protection if necessary. Each tower would hold instruments to measure meteorological characteristics and may be supported by guy wires. One of the meteorological towers would be located at a terrestrial site approximately a mile east of the eastern RFP, south of Great Western Reservoir. The second meteorological tower would be co-located with the air sampler that is in or near the southwestern floodplain of Standley Lake.

The third activity in the OU 3 air sampling program is use of small and medium-sized portable wind tunnels to characterize and measure the ability of winds at various speeds to move sediments on the exposed areas of the Standley Lake bed. The wind tunnels would be mounted on a small trailer and have an open-floored test section which would be placed over the surface of the lake bed to be tested. Air would be drawn through the test section at controlled velocities. The air stream would pass through a duct fitted with a filter which would collect particulates raised from the lake bed by the wind. The particulate samples would be sent to a laboratory to identify their volume and constituents. Six tests would be conducted at each of three sites in late summer when soil moisture is generally at its lowest level. Each of the tests would take about one day. One site would be on the bed of Standley Lake, the second on the bed of Great Western Reservoir, and the third on an unidentified upland site south of Great Western Reservoir.

Terrestrial and aquatic biota sampling locations in OU 3 are presented in Figure 8. The samples would be gathered using standard collection techniques such as vegetative clipping, live

animal trapping and field surveys to make population counts. These activities would continue for a year. Flora and fauna samples would be collected from floodplains.

OU 4

The location of OU 4 is shown in Figure 9. Site characterization work at OU 4 would include three types of field work that would take place within floodplains. There are approximately 35 surficial soil sample locations within OU 4 shown in Figure 11. At each location, two 1-meter square areas would be staked out one meter apart. Samples would be collected from within each square from a depth of up to one inch with either a plug type collector or a scoop. Three of the surficial soil sample locations are located in the Walnut Creek floodplain.

Borehole drilling in unconsolidated material is the third type of activity that would take place in the North Walnut Creek floodplain at OU 4. Four boreholes would be drilled in the floodplain on the south side of North Walnut Creek at the locations presented in Figure 14. A drill rig would be driven to the site and used to drill the boreholes. Boreholes are characteristically 6 inches in diameter and 15 to 60 feet deep, though some may be deeper. Each borehole can usually be drilled within a day. During drilling, the advancing drill bit produces a core of soil and/or rock, which is preserved for analysis, and drill cuttings which are shoveled into drums pending analysis for contaminants, storage, treatment and disposal. When drilling is completed, surface evidence of the activity is downed vegetation around the immediate site and a 6 inch pipe extending 2 to 3 feet above the ground. Some boreholes may be completed as wells by installing a well casing and screen. When they have served their purpose, boreholes and wells would be abandoned in accordance with RFP standard operating procedures (plugging and capping).

Finally, samples of flora and fauna would be taken at selected sites in OU 4, some in the floodplain. Representative locations are shown in Figure 15.

OU 9

The location of OU 9 is shown in Figure 16. The OU consists of a system of underground pipelines, shown as dashed lines in the Figure. Field work at OU 9 that would be in a floodplain is limited to flora and fauna sampling and the possibility of some excavation at the extreme eastern end of the OU in the headwaters of South Walnut Creek as indicated in Figure 17. Flora and fauna sampling activities would be the same as those undertaken in OU 3 (shown in Figure 18).

Certain portions of OU 9 extend east of the Protected Area (PA), the high security area of RFP, and may enter the floodplain of Walnut Creek or South Walnut Creek. It is not clear from existing documents whether the pipeline system in this area has already been removed, so field work may be undertaken along the length of the two eastern ends of the lines to determine if they still exist. One of these lines is believed to terminate near South Walnut Creek between the two security fences and may be in the floodplain in that area. The second line may extend along the top of the ridge for a distance of approximately 2,000-2,500 feet east of the PA fence, possibly as far as Pond B-2. If it still exists, a portion of this line could also be in a floodplain. Field work along both lines would consist of backhoe excavations on 200-foot centers approximately four feet wide by ten feet long by up to eleven feet deep to determine how far the pipeline extends. Soil samples would be taken from the excavations where a pipeline is found.

OU 7

OU 7, the Present Landfill, is located approximately 1300 feet north-northwest of the parking lot on the northern edge of the Plant's Protected Area on a ridge above Walnut Creek. The site is shown in Figure 19. Field work at OU 7 during 1992-3 would be limited to two types of sampling. At the locations indicated by the letter "V" on Figure 19, vegetation and soil samples would be collected. Approximately four of those locations are in or near a floodplain. Soil samples would be collected with a hand held device from the top 2 to 3 inches of the ground. The sites indicated by an "A" are aquatic sites, all of which are in a floodplain. Water, flora, fauna and sediment samples would be collected at each of these sites. Water and sediment samples would be up to a few quarts of water and a few pounds of sediments and would be collected by hand.

EFFECTS

Because of the non-invasive character and short duration of the floodplain activities of this project, it is expected that the project would have no positive or negative, direct or indirect, or long term effects on floodplains. Short term effects would include the crushing or clipping of small areas of vegetation and the disturbance of small areas of soil from the excavation of soil test pits. None of the site characterization activities would have any affect on lives or property or on the natural and beneficial values of the floodplains.

ALTERNATIVES

DOE is required by statute (Comprehensive Environmental Response, Compensation and Liability Act, Resource Conservation and Recovery Act) and by Agreement (Inter-Agency Agreement with the Environmental Protection Agency and the Colorado Department of Health) to clean up contaminated areas at RFP. Cleanup activities cannot be initiated until the sites to be cleaned have been characterized to identify the nature and extent of the contamination and the physical characteristics of the site. The activities that constitute this project are designed to do accomplish this end. Developing alternatives to the site characterization program and the sampling locations chosen is untenable because remediation cannot occur without site characterization, and the sampling for characterization must take place in the areas that are thought to be contaminated. Sampling activities have been located outside floodplains to the maximum extent possible. Therefore no alternative to the proposed sampling within floodplains is practicable.

Standard operating procedures that would be employed to avoid impacts to the floodplains during this project are:

1. All vehicles would stay on established roads or tracks to the maximum extent feasible.

2. Activities would be scheduled to the extent possible to avoid high soil moisture conditions when vehicles might cause excessive damage to the terrain.